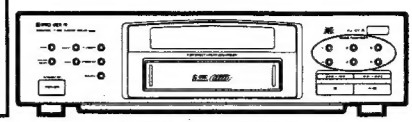
PIONEER®
The Art of Entertainment

Service Manual



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RRV1073

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MULTI－PLAY COMPACT DISC PLAYER

PD-J325M

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model	Power Requirement	The voltage can be converted by the following method.
	PD－J325M		
SD	○	AC110V/120－127V/220V/240V	With the voltage selector

- **This product is a system(s) component.**
  This product does not function properly when independent; to avoid malfunctions, be sure to connect it to the prescribed system component(s), otherwise damage may result.

CONTENTS

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T-FFG FEB. 1994 Printed in Japan

CHAPTER 1

1.1 SAFETY INFORMATION

VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING!
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

LASER
Kuva 1
Lasersateilyn varoitusmerkki

WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

IMPORTANT
THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

LASER
Picture 1
Warning sign for laser radiation

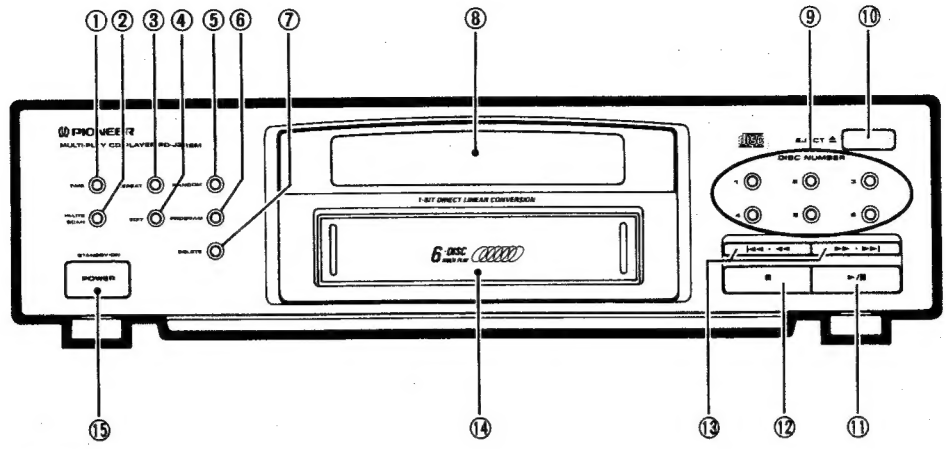
Additional Laser Caution

1. Laser Interlock Mechanism
   The ON/OFF (ON : low level, OFF : high level) status of the LPS1 (S601) and LPS2 (S602) switches for detecting the loading state is detected by the system microprocessor, and the design prevents laser diode oscillation when both switches LPS1 and LPS2 are not ON (low level) (clamped state).
   Thus, interlock will no longer function if switches LPS1 (S601) and LPS2 (S602) are deliberately shorted.
   The interlock also does not operate in the test mode *. Laser diode oscillation will continue, if pin 1 of M51593FP (IC101) on the preamplifier board loaded on pick up assembly are connected to GND, or pin 19 is connected to low level (ON), or else the terminals of Q101 are shorted to each other (fault condition).

2. When the cover is opened with the servo mechanism block removed to be turned over, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam. '92M1

* : Refer to page 1—6.

1.2 PANEL FACILITIES



• Illustration shows model PD-J325M.

① TIME button

This button selects the display mode of the indicator panel.
When the button is pressed during CD playback, the indication changes from TIME, REMAIN, to TOTAL in that order. (For details concerning the display contents, refer to the DISPLAY SECTION.)

② HI-LITE SCAN (disc/track) button

DISC SCAN: Press this button during stop mode to play back a 10-second passage positioned one minute after the beginning of the first track for each disc contained in the magazine in the order of disc 1 through disc 6.
TRACK SCAN: Press the button during DISC SCAN to play back a 10-second passage positioned one minute after the beginning of each track in sequence for each disc contained in the magazine in the order of disc 1 through disc 6.

③ REPEAT button

Press this button for repeat playback.

④ EDIT button

When using with the STEREO DOUBLE CASSETTE DECK AMPLIFIER (DC-J121/DC-J221):
With this button you can automatically record (edit) from a CD to match the length of the tape. For more details, see the operating instructions supplied with the cassette deck amplifier.
When using with an ordinary audio system (PD-J325M only)

⑤ RANDOM button

Press to begin random playback.

⑥ PROGRAM button

Use to program a sequence of tracks.

⑦ DELETE button

Pressing this button and then selecting the discs with DISC NUMBER buttons (1 through 6) or selecting the tracks with Manual/Track search button will result in the selected discs and tracks not being played even when Play/Pause button is pressed.

⑧ Display

⑨ DISC NUMBER buttons (1—6)

Use to select disc numbers for playback or programming.

⑩ EJECT button (⏏)

Press to eject a magazine. When pressed, any magazine inside is expelled forward.

⑪ Play/Pause button (►/II)

When the CD player is paused or stopped, press to resume play or begin play.
If pressed during play, this temporarily interrupts play.

⑫ Stop button (■)

Press to stop playback. Press to clear a program.

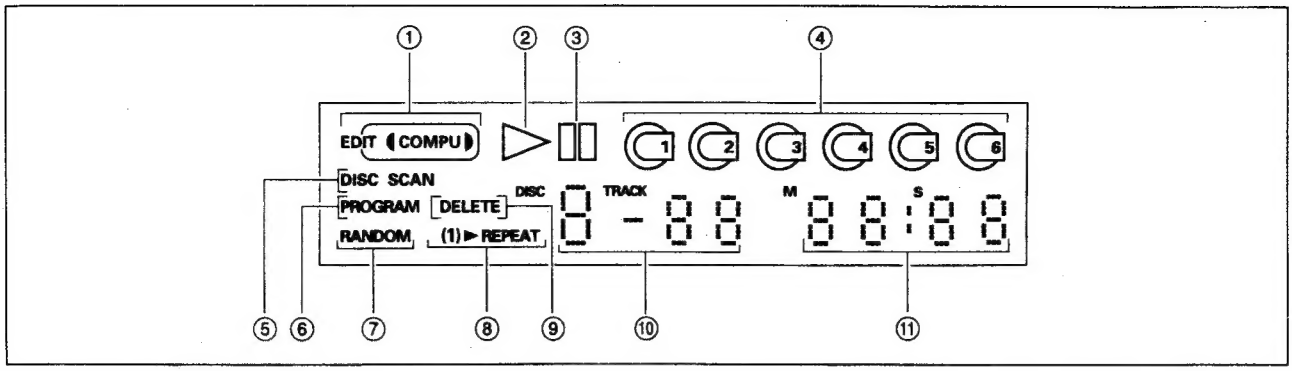
⑬ Manual/Track search button (I◄◄ · ◄◄, ►► · ►►I)

To perform track search in normal playback, programmed playback or pause mode.
You can advance to the next track or go back to the previous one by pressing this button. The fast forward or fast reverse function will be activated by holding down this button.

⑭ Magazine insertion slot door

⑮ POWER switch (STANDBY/ON)

Press to turn power to the unit ON and STANDBY.



DISPLAY SECTION

① Pressing EDIT button to ON will cause half-circle mark ◖ ◗ on either side of the [COMPU] indicator to light.

② Lights during playback.

③ Lights during pause mode, when playback is temporarily interrupted.

④ If a nonexistent disc is searched for, the corresponding disc symbol will not light up.

⑤ The [DISC SCAN] indicator blinks during disc scan and the [SCAN] indicator blinks during track scan.

⑥ Lights after programming (after program has been memorized).

⑦ Lights during random playback.

⑧ Lights during repeat playback.

⑨ Lights during the Delete program.

⑩ **DISC** : Indicates disc number (1—6) during playback or search.
TRACK : Indicates track number (01—99) during playback or search.

⑪ Display change
Changes when TIME button is pressed during CD playback.
TIME : Displays the track number of the track being played (TRACK) and the elapsed time (minutes and seconds).
REMAIN : Displays the remaining time on the track being played.
When the TIME button is pressed again, the remaining time on the disc being played will be displayed.
During program play, random play, delete or delete random play operations, the DISC REMAIN display will not be shown. Also, track numbers beyond 24 will not be indicated on the REMAIN display.
TOTAL : Displays the total number of tracks on the disc (TRACK) and the overall playback time of the disc.
During playback, the display goes on for about 5 seconds before changing to the TIME display.
During programmed play, the TOTAL display will indicate the total number of tracks programmed (the total program time will not be displayed).

1.3 SPECIFICATIONS

Type ..... Compact disc digital audio system
Discs used ..... Compact disc
Frequency response ..... 4 Hz to 20 kHz
Number of channels ..... 2 channels (stereo)
Power requirements (PD-J325M only)
..... AC 110/120-127/220/240 V (Switchable), 50/60 Hz
Power consumption (PD-J325M only) ..... 12 W
Operating temperature ..... +5°C - +35°C
Dimensions
PD-J325M ..... 360 (W) x 90 (H) x 331 (D) mm
PD-J225M ..... 360 (W) x 90 (H) x 325 (D) mm
Weight ..... 3.7 kg

Accessories

Six-compact disc magazine 1
Output cable (PD-J325M only) 1
Operating Instructions 1

• *The specifications and design of this product are subject to change without notice, due to improvements.*

The Magazine Type Multi-Play CD Players with mark and the Magazines with the same mark are compatible for 5-inch (12 cm) discs.

1.4 ADJUSTMENTS

1.4.1 Adjustment Methouds

If a disc player is adjusted incorrectly or inadequately, it may malfunction or not work at all even though there is nothing at all wrong with the pickup or the circuitry. Adjust correctly following the adjustment procedure.

● Adjustment Items/Verification Items and Order

If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in steps 1 − 4, the pickup block may be defective.

Step	Item	Test Point	Adjustment Location
1	Focus offset verification	TP1, Pin 6 (FCS. ERR)	None
2	Tracking error balance verification	TP1, Pin 2 (TRK. ERR)	None
3	Pickup radial/tangential direction tilt adjustment	TP1, Pin 1 (RF)	Radial tilt adjustment screw, Tangential tilt adjustment screw
4	RF level verification	TP1, Pin 1 (RF)	None
5	Focus servo loop gain adjustment	TP1, Pin 5 (FCS. IN) TP1, Pin 6 (FCS. ERR)	VR152 (FCS. GAN)
6	Tracking servo loop gain adjustment	TP1, Pin 3 (TRK. IN) TP1, Pin 2 (TRK. ERR)	VR151 (TRK. GAN)

● **Abbreviation table**

FCS. ERR :Focus Error
TRK. ERR :Tracking Error
FCS GAN :Focus Gain
TRK GAN :Tracking Gain
FCS. IN :Focus In
TRK. IN :Tracking In

● Measuring Instruments and Tools

1. Dual trace oscilloscope (10:1 probe)
2. Low-frequency oscillator
3. Test disc (YEDS-7)
4. Low pass filter (39kΩ +0.001 μF)
5. Resistor (100 kΩ)
6. Standard tools

● Test Point and Adjustment Variable Resistor Positions

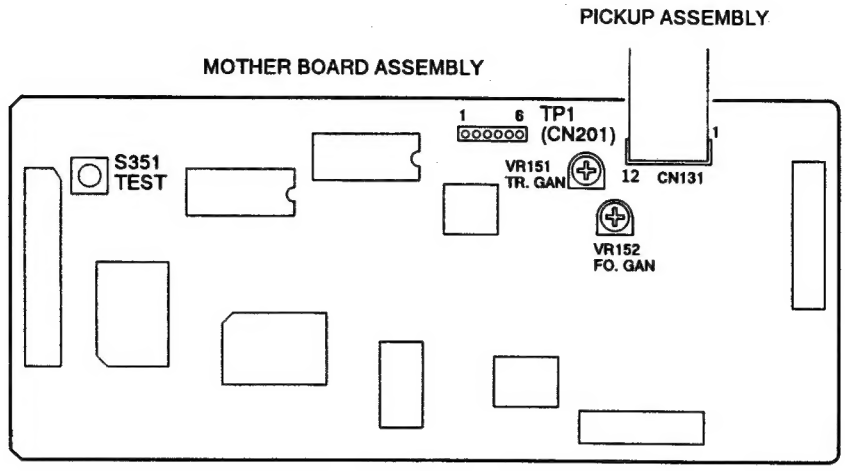


Figure 1. Adjustment Locations

● Notes

1. Use a 10:1 probe for the oscilloscope.
2. All the knob positions (settings) for the oscilloscope in the adjustment procedures are for when a 10:1 probe is used.

● Test Mode

These models have a test mode so that the adjustments and checks required for service can be carried out easily. When these models are in test mode, the keys on the front panel work differently from normal. Adjustments and checks can be carried out by operating these keys with the correct procedure. For these models, all adjustments are carried out in test mode.

[Setting these models to test mode]

How to set this model into test mode.
1. Turn off the power switch.
2. Press the TEST mode switch (S351). (See Figure 1.)
3. Turn on the power switch.

When the test mode is set correctly, the display is different from what it usually is when the power is turned on. If the display is still the same as usual, test mode has not been set correctly, so repeat Steps 1 – 3.

[Release from test mode]

Here is the procedure for releasing the test mode:

1. Press the STOP key and stop all operations.
2. Turn off the power switch on the front panel.

[Operations of the keys in test mode]

Code	Key Name	Function In Test Mode	Explanation
	PGM (PROGRAM)	Focus servo close	The laser diode is lit up and the focus actuator is lifted up, then lowered slowly and the focus servo is closed at the point where the objective lens is focused on the disc. With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo. If you can hear this sound, the focus servo is operating correctly. If you press this key with no disc mounted, the laser diode lights up, the focus actuator is pulled up, then the actuator is lowered and raised three times and returned to its original position.
▶/II	PLAY/PAUSE	Spindle servo ON	Starts the spindle motor in the clockwise direction and when the disc rotation reaches the prescribed speed (about 500 rpm at the inner periphery), sets the spindle servo in a closed loop. Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed. If the focus servo does not go correctly into a closed loop or the laser light shines on the mirror section at the outermost periphery of the disc, the same symptom is occurred.
▶/II	PLAY/PAUSE	Tracking servo close/open	Pressing this key when the focus servo and spindle servo are operating correctly in closed loops puts the tracking servo into a closed loop, displays the track number being played back and the elapsed time on the front panel, and outputs the playback signal. If the elapsed time is not displayed or not counted correctly or the audio is not played back correctly, it may be that the laser is shining on the section with no sound recorded at the outer edge of the disc, that something is out of adjustment, or that there is some other problem. This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.

Code	Key Name	Function In Test Mode	Explanation
⏮ · ◀◀	MANUAL/ TRACK SEARCH REV	Carriage reverse (inwards)	Moves the pickup position toward the inner diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
▶▶ · ⏭	MANUAL/ TRACK SEARCH FWD	Carriage forward (outwards)	Moves the pickup position toward the outer diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
■	STOP	Stop	Initializes and the disc rotation stops. The pickup and disc remain where they are when this key is pressed.
⏏	EJECT	CD magazine eject	Stores Disc 1 in the CD magazine, then ejects the CD magazine. However, even though the CD magazine is ejected, the pickup does not return to the park position. Even if the CD magazine is mounted again, the pickup remains where it is.

Note : When inserting the magazine, disc 1 of the magazine is loaded automatically.

[How to play back a disc in test mode]

In test mode, since the servos operate independently, playing back a disc requires that you operate the keys in the correct order to close the servos.
Here is the key operation sequence for playing back a disc in test mode.

PGM(PROGRAM) — Lights up the laser diode and closes the focus servo.

⇩

PLAY/PAUSE ▶/II — Starts the spindle motor and closes the spindle servo.

⇩

PLAY/PAUSE ▶/II — Closes the tracking servo.

Wait at least 2-3 seconds between each of these operations.

1. Focus Offset Verification

● Objective ● Symptom when out of adjustment	Verify the DC offset for the focus error amp. The model does not focus in and the RF signal is dirty.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 6 (FCS. ERR) [Settings] 5 mV/division 10 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, stopped (just the Power switch on) None None needed

[Procedure]

Verify the DC voltage at TP1, Pin 6 (FCS. ERR) is 0 ± 50 mV.

Note : If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in adjustment items 1 – 4, the pickup block may be defective.

2. Tracking Error Balance Verification

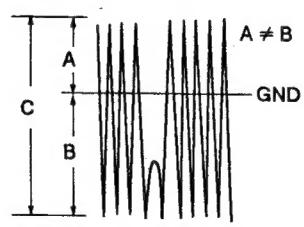
● Objective ● Symptom when out of adjustment	To verify that there is no variation in the sensitivity of the tracking photo diode. Play does not start or track search is impossible.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 2 (TRK. ERR). This connection may be via a low pass filter. [Settings] 50 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, focus and spindle servos closed and tracking servo open None YEDS-7

[Procedure]

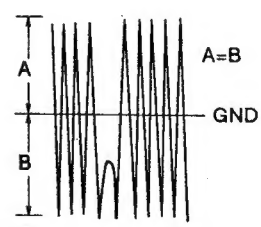
1. Move the pickup to midway across the disc (R=35mm) with the MANUAL/TRACK SEARCH FWD ▶▶ · ▶▶| or REV |◀◀ · ◀◀ key.
2. Press the PGM (PROGRAM) key, then the PLAY/PAUSE ▶/❚❚ key in that order to close the focus servo then the spindle servo.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Supposing that the positive amplitude of the tracking error signal at TP1, pin 2 (TRK ERR) is (A) and the negative amplitude is (B), the following expression is satisfied.

When $A \geqq B$, $\frac{A-B}{C} \times \frac{1}{2} \leqq 0.1$

When $A < B$, $\frac{B-A}{C} \times \frac{1}{2} \leqq 0.1$



When there is a DC component



When there is no DC component

3. Pickup Radial/Tangential Tilt Adjustment

● Objective	To adjust the angle of the pickup relative to the disc so that the laser beams are shone straight down into the disc for the best read out of the RF signals.		
● Symptom when out of adjustment	Sound broken;some discs can be played but not others.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF). [Settings] 20 mV/division 200 ns/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play Pickup radial tilt adjustment screw and tangential tilt adjustment screw YEDS-7

[Procedure]

1. Press the MANUAL/TRACK SEARCH FWD ▶▶ · ▶▶| or REV |◀◀ · ◀◀ key to move the pickup to halfway across the disc (R=35mm).
   Press the PGM (PROGRAM) key, the PLAY/PAUSE ▶/❚❚ key twice in that order to close the respective servos and put the player into play mode.
2. First, adjust the radial tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly.
3. Next, adjust the tangential tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly (Figure 3).
4. Adjust the radial tilt adjustment screw and the tangential tilt adjustment screw again so that the eye pattern can be seen the most clearly. As necessary, adjust the two screws alternately so that the eye pattern can be seen the most clearly.
5. When the adjustment is completed, lock the radial and tangential adjustment screw.
   Note:Radial and tangential mean the directions relative to the disc shown in Figure 2.

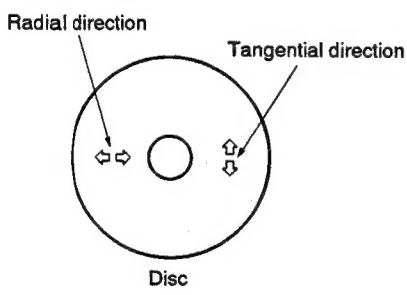
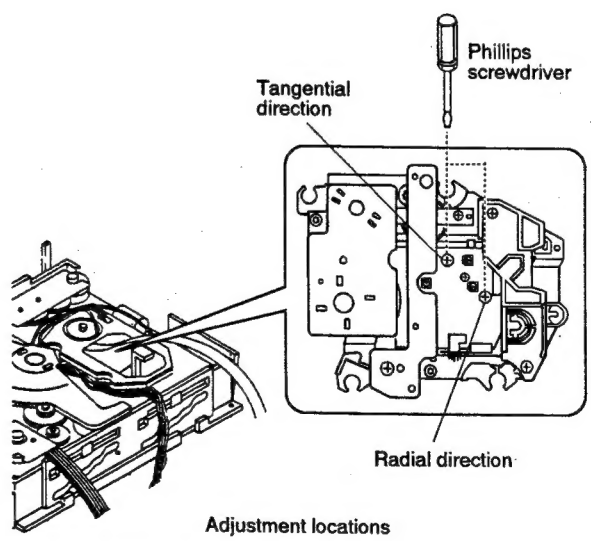


Figure 2



Adjustment locations

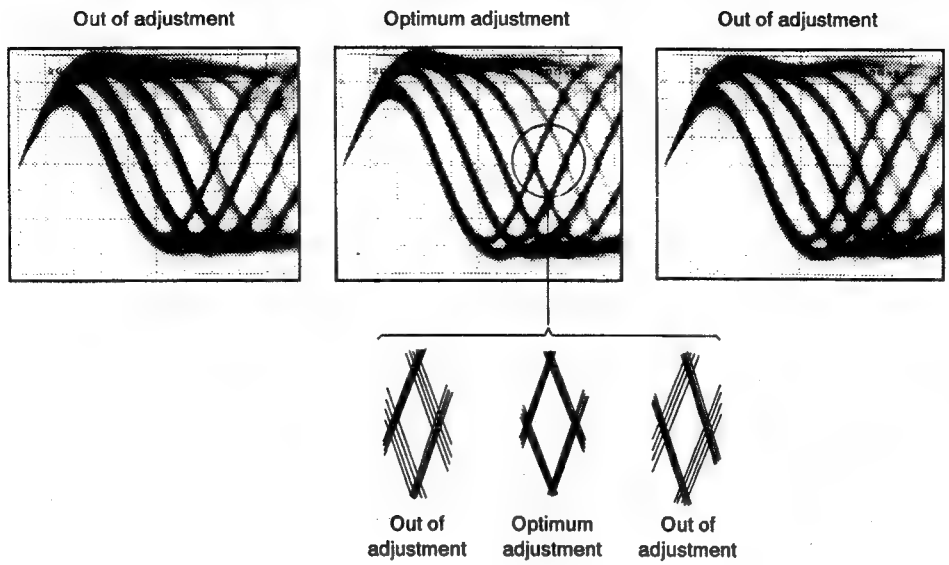


Figure 3. Eye pattern

4. RF Level Verification

● Objective	To verify the playback RF signal amplitude		
● Symptom when out of adjustment	No play or no search		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF). [Settings] 50 mV/division 10 ms/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play None YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35mm) with the MANUAL/TRACK SEARCH FWD ⏩ · ⏭ or REV ⏮ · ⏪ key, then press the PGM (PROGRAM) key, the PLAY/PAUSE ▶/⏸ key twice in that order to close the respective servos and put the player into play mode.
2. Verify the RF signal amplitude is 1.2 Vp-p ± 0.2 V.

5. Focus Servo Loop Gain Adjustment

● Objective	To optimize the focus servo loop gain.		
● Symptom when out of adjustment	Playback does not start or focus actuator noisy.		
● Measurement instrument connections	See figure 4. [Settings] CH1 CH2 20 mV/division 5 mV/division X-Y mode	● Player state ● Adjustment location ● Disc	Test mode, play VR152 (FCS. GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 1 Vp-p.
2. Press the MANUAL/TRACK SEARCH FWD ▶▶ · ▶▶| or REV |◀◀ · ◀◀ key to move the pickup to halfway across the disc (R=35mm), then press the PGM (PROGRAM) key, the PLAY/PAUSE ▶/II key twice in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR152 (FCS. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

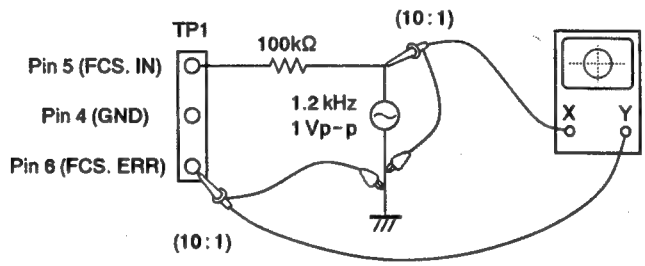
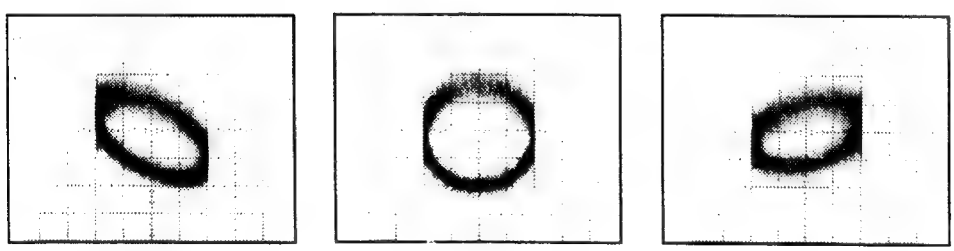


Figure 4

Focus Gain Adjustment



Higher gain | Optimum gain | Lower gain

6. Tracking Servo Loop Gain Adjustment

● Objective	To optimize the tracking servo loop gain.		
● Symptom when out of adjustment	Playback does not start, during searches the actuator is noisy, or tracks are skipped.		
● Measurement instrument connections	See Figure 5. [Settings] CH1 CH2 50 mV/division 20 mV/division X-Y mode	● Player state ● Adjustment location ● Disc	Test mode, play VR151 (TRK. GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 2 Vp-p.
2. **Press the MANUAL/TRACK SEARCH FWD ⏩ · ⏭ or REV ⏮ · ⏪ key to move the pickup to halfway across the disc (R=35mm), then press the PGM (PROGRAM) key, the PLAY/PAUSE ▶/⏸ key twice in that order to close the corresponding servos and put the player into play mode.**
3. Adjust VR151 (TRK. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

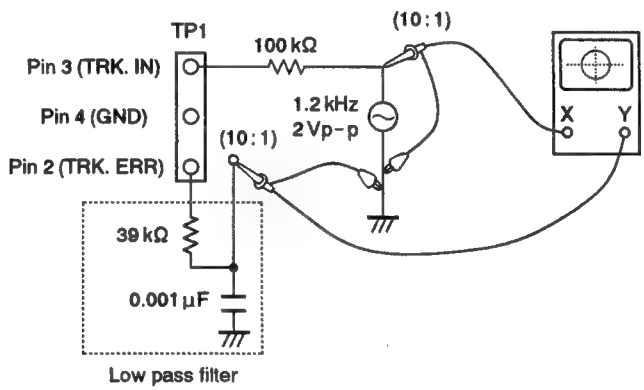


Figure 5

Tracking Gain Adjustment

Higher gain | Optimum gain | Lower gain

1.5 PARTS LIST FOR PACKING AND EXPLODED VIEWS

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by " ◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

1.5.1 PACKING AND EXTERIOR

• PARTS LIST

Mark	No.	Description	Parts No.
	1	FUNCTION PANEL Y	PWN2452
	2	NAME PLATE	AAM1047
	3	DISPLAY WINDOW	PAM1595
	4	DOOR	PNW2267
	5	DOOR SPRING	PBH1022
	6	POWER KNOB	PAC1788
	7	MODE BUTTON	PAC1706
	8	.....	
⚠	9	SUB BOARD ASSY	PWX1305
	10	CONTROL BUTTON	PAC1787
	11	22P F · F · C/30V	PDD1114
	12	SCREW	PPZ30P100FMC
	13	SCREW	BBZ30P060FCC
⚠	14	POWER TRANSFORMER	PTT1126
	15	POWER BOARD ASSY	PWZ2666
	16	SCREW	IBZ30P080FCC
	17	SCREW	PDZ30P050FMC
NSP	18	MULTI MECHANISM ASSY	PXA1547
	19	CORD CLAMPER	RNH−184
NSP	20	UNDER BASE	PNA1967
	21	FOOT ASSY	PXA1201
	22	SCREW	BBZ30P080FCC
	23	CONNECTER BOARD ASSY	PWZ2667
NSP	24	REAR BASE	PNA2116
	25	.....	
	26	CORD WITH CONNECTOR	PDE1107
⚠	27	MOTHER BOARD ASSY	PWM1728
NSP	28	PCB HOLDER	PNW2100
	29	BONNET ASSY	REA1004
	30	.....	
	31	STRAIN RELIEF	CM−22B
⚠	32	AC POWER CORD	RDG1003
	33	EARTH LEAD UNIT	XDF−502
⚠	34	LINE VOLTAGE SELECTOR	PSB1002
	35	BINDER	Z09−056
	36	DISPLAY BOARD ASSY1	PWZ2774
	37	DISPLAY BOARD ASSY2	PWZ2775
	38	STYROL PROTECTOR F	PHA1224
	39	STYROL PROTECTOR R	PHA1225
	40	HOLDER	PHC1064
	41	PACKING CASE	PHG2032
	42	SHEET	Z23−007
	43	SHEET	Z23−032
	44	OPERATING INSTRUCTIONS (ENGLISH/SPANISH/CHINESE)	PRE1202
	45	MAGAGINE ASSY	PXA1549
	46	CORD WITH PLUG	PDE1065
NSP	47	PARALLEL WIRE	D20PYY0615E
NSP	48	VINYL BAG	Z21−010

1.5.2 MULTI MECHANISM ASSEMBLY

• **PARTS LIST**

Mark	No.	Description	Part No.
	1	Motor pulley	PNW1634
	2	Gear holder	PNW1929
	3	PU Frexible cable	PNP1343
	4	Cam gear	PNW1923
	5	Belt	PEB1138
	6	Top guide N	PNW2441
	7	Gear pulley	PNW1918
	8	Gear S	PNW1919
	9	Gear L	PNW1920
	10	Eject spring	PBH1107
	11	Switch lever	PNW1927
	12	Seven bar	PNW1931
	13	Sub rotary lever	PNW1933
	14	Sub rotary lever spring	PBH1111
	15	Rotary lever	PNW1932
	16	Drive plate	PNW1930
	17	Motor screw	PBA-112
	18	Holder lever spring	PBH1110
	19	Disc holder	PNW1924
	20	Cushion A	PED1001
	21	Holder lever	PNW1925
	22	Float rubber	PEB1014
	23	Float rubber	PEB1132
	24	Float screw	PBA1073
	25	Release lever	PNW1934
	26	Release spring	PBH1106
	27	Clamper cam	PNW1922
	28	Clamper holder	PNW1921
	29	Clamper spring	PBH1109
	30	Clamper	PNW1857
	31	Lock lever	PNW1917
	32	Lock spring	PBH1108
	33	Stair NL	PNW2443
	34	Stair NR	PNW2444
	35	Synchronize lever	PNW1926
	36	Motor assembly (LOADING, DISC SELECT)	PEA1130
	37	Screw	PMZ26P040FMC
	38	Screw	PPZ30P080FMC
	39	Screw	BBZ30P060FMC
	40	Washer	WT26D047D025
	41	Washer	WA31D054D025
	42	E ring	Z39-010
	43	Screw	IPZ30P080FMC
	44	Rubber spacer	PEB1238
	45	Rubber spacer	PEB1179
	46	Silent ring	PBK1093
	47	Washer	WA62D130D025
	48	Earth spring	PBH1132

Mark	No.	Description	Part No.
	49	Guide bar	PLA1094
	50	Disc table	PNW1067
	51	Gear 1	PNW2052
	52	Gear 2	PNW2053
	53	Gear 3	PNW2054
	54	Pinion gear	PNW2055
	55	PWB holder	PNW2057
	56	Carriage base	PNW2445
	57	D.C. motor assembly (spindle, with oil)	PEA1235
	58	Pickup assembly	PEA1179
	59	Disc table assembly	PEA1035
	60	Screw	BBZ26P060FMC
	61	Screw	BPZ20P060FMC
	62	Screw	BPZ26P100FMC
	63	Screw	JFZ17P025FZK
	64	Screw	JFZ20P040FMC
	65	Washer	WT12D032D025
	66	• • • • •	
	67	Stopper spring	PBH1131
	68	Stopper	PNW2069
	69	D.C. motor assembly (CARRIAGE)	PEA1246
	70	Upper chassis	PNB1267
	71	Sub chassis	PNW2440
	72	Connector assembly 4P (Yellow and blue)	PDE1241
	73	Connector assembly 4P (White and blue)	PDE1240
NSP	101	Motor	VXM1033
NSP	102	Eject lever	PNB1306
	103	• • • • •	
NSP	104	Servo mechanism assembly M	PXA1543
NSP	105	Loading board assembly	PWZ2038
	106	• • • • •	
	107	• • • • •	
NSP	108	Main chassis	PNW2074
NSP	109	Select board assembly	PWZ2533
NSP	110	Motor board assembly	PWZ2040
NSP	111	Mechanism board assembly	PWX1192
NSP	112	Earth lead unit	PDF1074
NSP	113	Clamp magnet	PMF1014
NSP	114	Gear stopper	PNB1303
NSP	115	Yoke M	PNB1312
NSP	116	AV angle	PNB1405
NSP	117	Carriage DC motor / 0.3W	PXM1027

1.6 PCB PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by " ◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	→	*56×10¹*	→ *561* ·····	*RD1/8PM 5 6 1 J*
47kΩ	→	*47×10³*	→ *473* ·····	*RD1/4PS 4 7 3 J*
0.5Ω	→	*0R5*	·····	*RN2H 0 R 5 K*
1Ω	→	*010*	·····	*RS1P 0 1 0 K*

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	→	*562×10¹*	→ *5621* ·····	*RN1/4PC 5 6 2 1 F*

Mark	No.	Description	Parts No.
LIST OF ASSEMBLIES			
⚠		MOTHER BOARD ASSY	PWM1728
⚠		SUB BOARD ASSY	PWX1305
		├ DISPLAY BOARD ASSY1	PWZ2774
		└ DISPLAY BOARD ASSY2	PWZ2775
⚠		SUB BOARD ASSY	PWX1306
		├ POWER BOARD ASSY	PWZ2666
		└ CONNECTOR BOARD ASSY	PWZ2667
NSP		MECHANISM BOARD ASSY	PWX1279
NSP		├ LOADING BOARD ASSY	PWZ2038
NSP		├ MOTOR BOARD ASSY	PWZ2040
NSP		└ SELECT BOARD ASSY	PWZ2533
NSP		MECHANISM BOARD ASSY	PWX1192
MOTHER BOARD ASSY			
SEMICONDUCTORS			
	IC151		CXA1372Q
	IC301		CXD2500AQ
⚠	IC201,IC202		LA6520
	IC405		NJM4565D−D
	IC351		PD4439A
	IC401		TC9237BF
	Q361,Q381,Q382		2SC1740S
	Q403,Q404		2SD2144S
	Q406		DTA124ES
	Q405		DTC124ES
	D381−D383		1SS133X
CAPACITORS			
	C403,C404		CCSQCH180J50
	C435−C438		CCSQCH390J50
	C429,C430		CCSQCH560J50
	C433,C434		CEAS220M25
	C216,C217,C302,C31−C34,C351		CEAS330M16
	C160,C162		CEAS4R7M50
	C309		CEASR47M50
	C157,C164,C167,C169,C202,C203, C205,C206,C212,C308,C354,C375		CKSQYB103K50
	C158,C159,C161,C163,C301,C304 C306,C441,C442		CKSQYB104K25
	C155		CKSQYB152K50
	C170		CKSQYB182K50
	C156,C168		CKSQYB332K50
	C171,C172		CKSQYB333K25
	C307		CKSQYB472K50
	C353,C356,C361,C41,C42		CKSQYB473K25
	C420,C43,C44		CKSQYF103Z50
	C410,C411,C414−C416,C418,C419, C422,C423,C431,C432		CKSQYF103Z50
	C421,C424,C426		CKSQYF104Z25
			CKSQYF473Z25
RESISTORS			
	VR151,VR152	(22Ω/0.1W)	RCP1046
		Other Resistors	RS1/10S□□□J
OTHERS			
	CN131	FPC Connector (12P)	12FMZ−ABT
	CN203	AMP Connector (4P)	4−173981−4
	CN204	6P Jumper connector (2MMP)	52147−0610
	CN383	7P Jumper connector (2MMP)	52147−0710
	CN11	8P Jumper connector (2MMP)	52147−0810
	CN201	6P Top post	B6P−SHF
	CN351	FFC Connector (22P)	HLEM22S
	S351	Tact switch	PSG1006
	X401	Crystal resonator	PSS1008
			VEF1008
	CN202	AMP Connector (4P)	VKN1051
	X351	Ceramic resonator	VSS1014
DISPLAY BOARD ASSY1			
SEMICONDUCTORS			
	D701−D706		1SS254
SWITCHES AND RELAYS			
	S701,S703−S707,S710−S713,S716		PSG1006

Mark	No.	Description	Parts No.
OTHERS			
	CN701	FFC Connector	HLEM22R
	V701	FL Tube	PEL1076
DISPLAY BOARD ASSY2			
SWITCHES AND RELAYS			
	S702,S708,S709,S714,S715,S717,S718		PSG1006
	S751		PSG1007
POWER BOARD ASSY			
SEMICONDUCTORS			
⚠	IC20		M5298P
	Q62		2SC1740S
⚠	D11－D14,D52		11ES2
	D54		MTZJ18B/C
CAPACITORS			
	C60		CEAS010M50
	C28		CEAS101M10
	C52		CEAS101M35
	C27		CEAS102M10
	C26		CEAS222M16
	C25		CEAS472M16
	C11－C16		CKCYF103Z50
RESISTORS			
		Other Resistors	RD1/6PM□□□J
OTHERS			
	CN12	4P Jumper connector (2MMP)	52147－0410
		Heat sink	PNB1233
		Wrapping terminal	RKC－061
		PCB Binder	VEF1008
CONNECTOR BOARD ASSY			
OTHERS			
	CN382	9P Jumper connector	KPE9
	JA401	2P Pin jack	PKB1009
LOADING BOARD ASSY			
SWITCHES AND RELAYS			
	S601,S602		DSG1016
OTHERS			
	CN601	AMP Connector (4P)	4－173979－4
MOTOR BOARD ASSY			
OTHERS			
	CN602	6P Jumper connector (2MMP)	52151－0610
SELECT BOARD ASSY			
SWITCHES AND RELAYS			
	S604－S606		DSG1016
	S603		PSG1010

Mark	No.	Description	Parts No.
MECHANISM BOARD ASSY			
SWITCHES			
	S610		DSG1016
OTHERS			
	CN610	Connector 4P	VKN1061

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Service Manual

ORDER NO.
RRZ1073

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MULTI – PLAY COMPACT DISC PLAYER

PD-J325M

CHAPTER 2

CONTENTS

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
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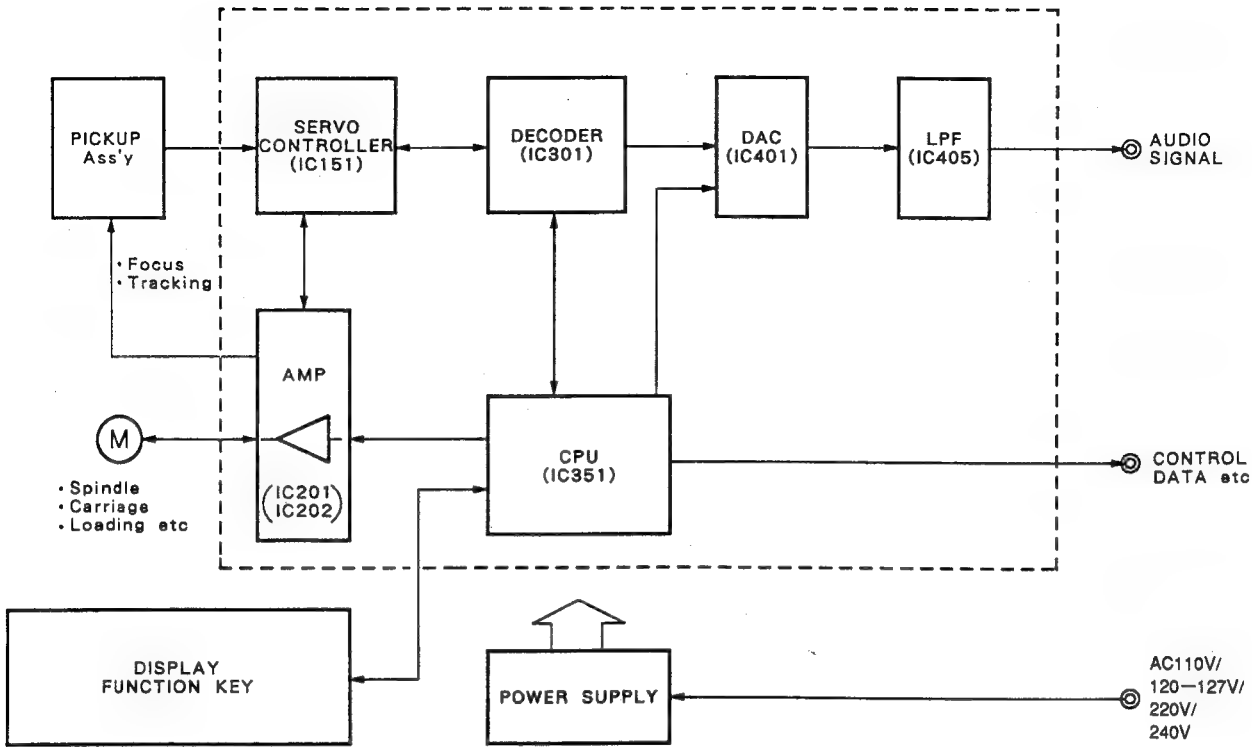
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911

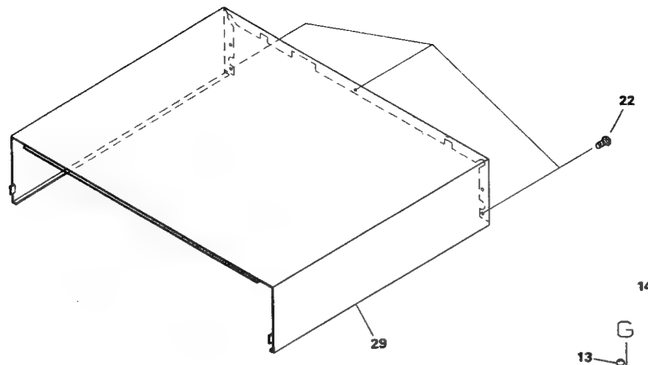
T-FFG FEB. 1994 Printed in Japan

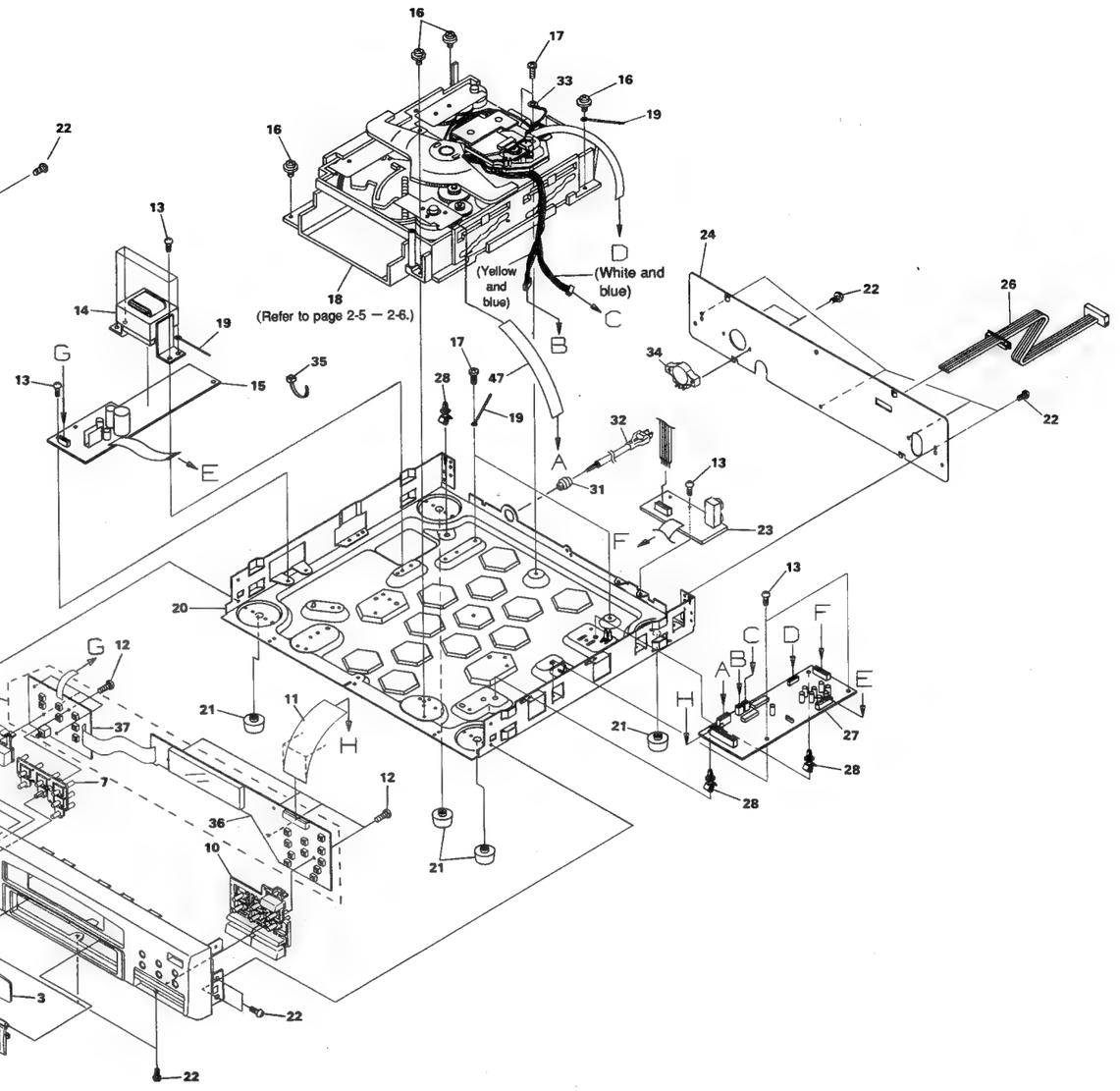
2.1 BLOCK DIAGRAM



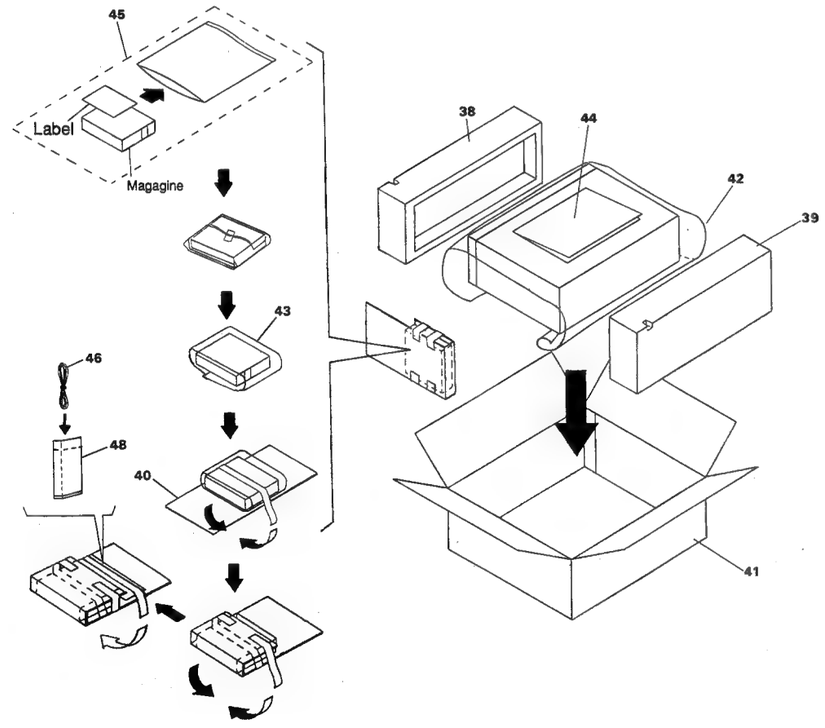
2.2 PACKING AND EXPLODED VIEWS

2.2.1 PACKING AND EXTERIOR



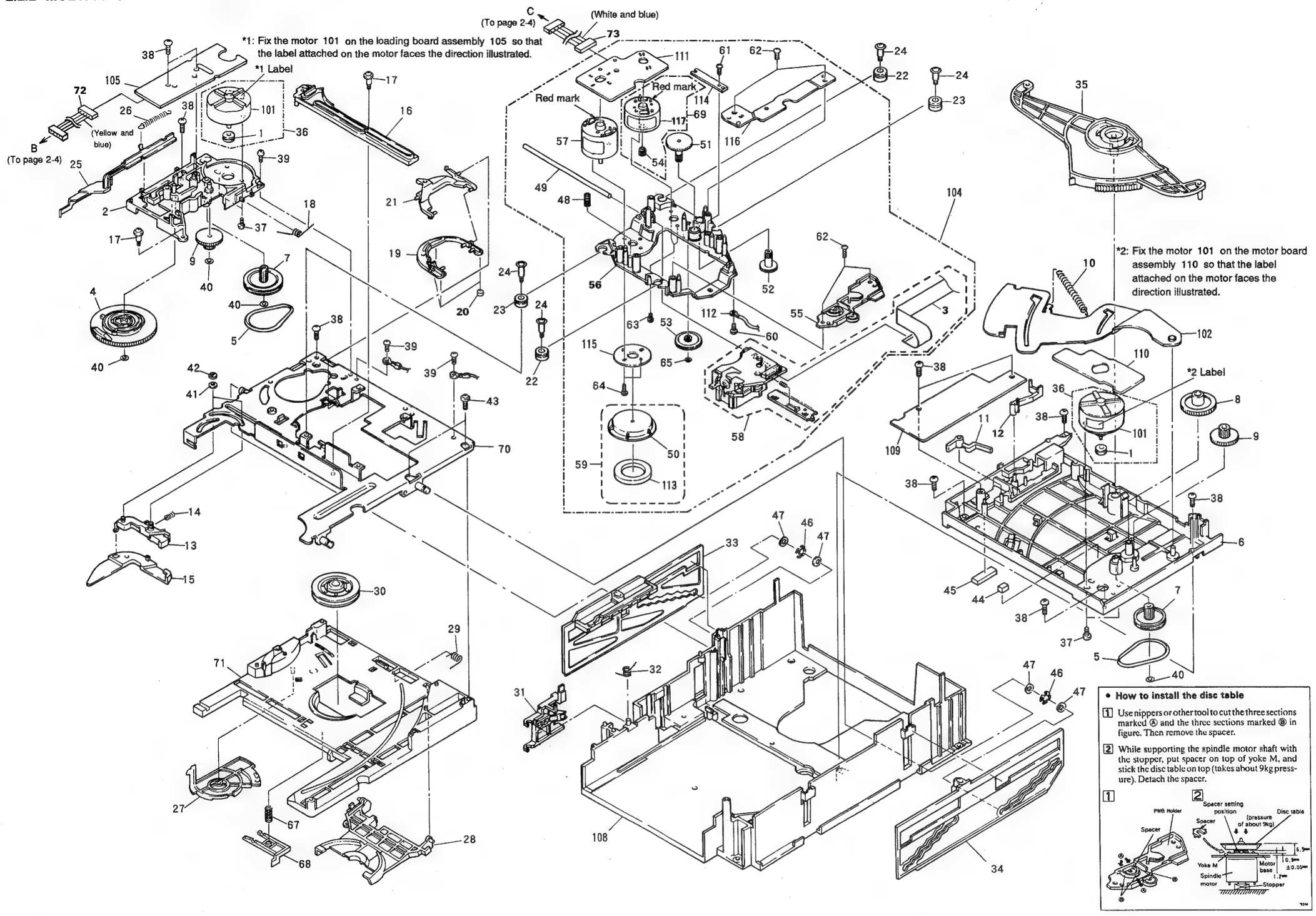


● PACKING



NOTE: Screws adjacent to ▼ mark on product are used for disassembly.

2.2.2 MULTI MECHANISM ASSEMBLY

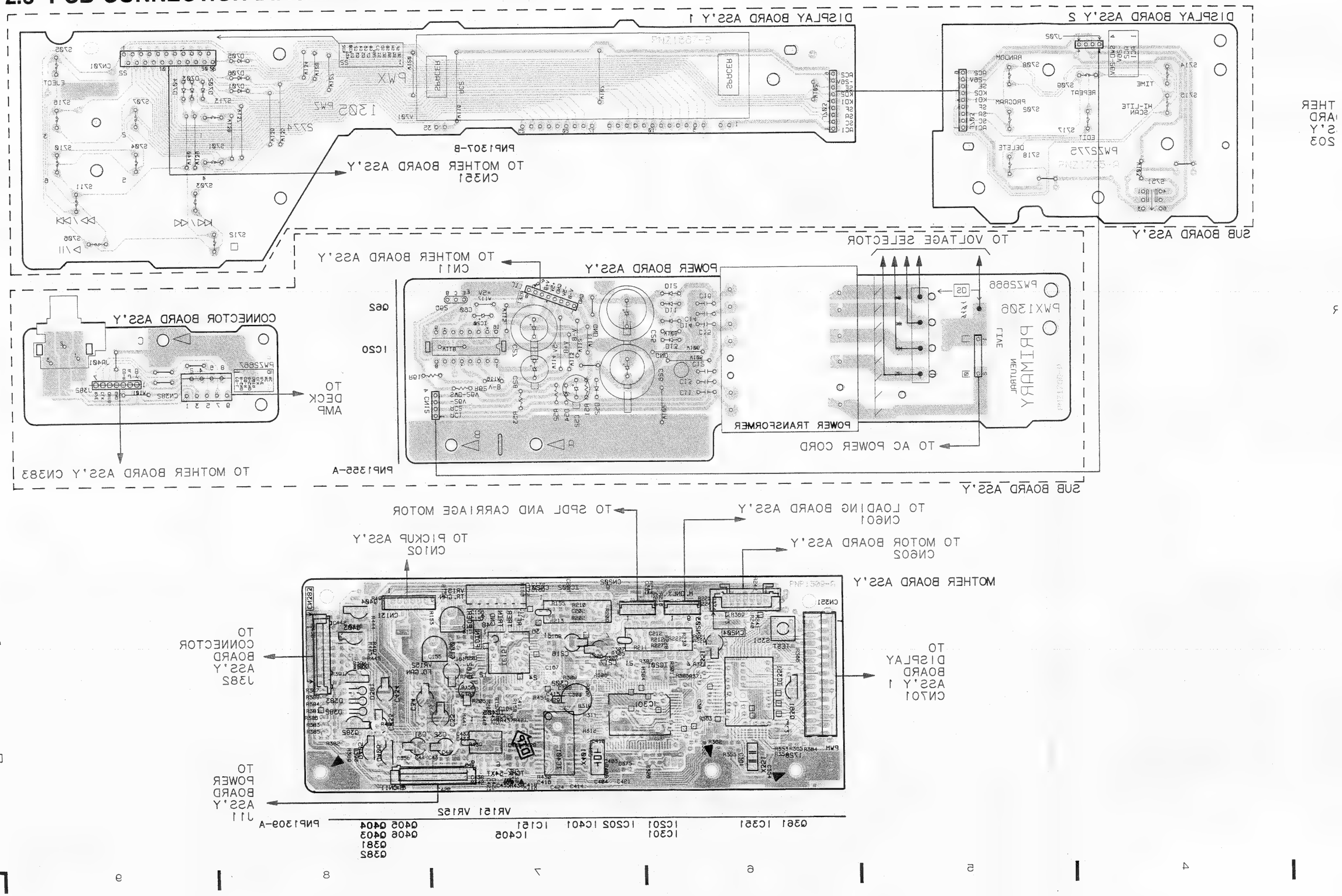


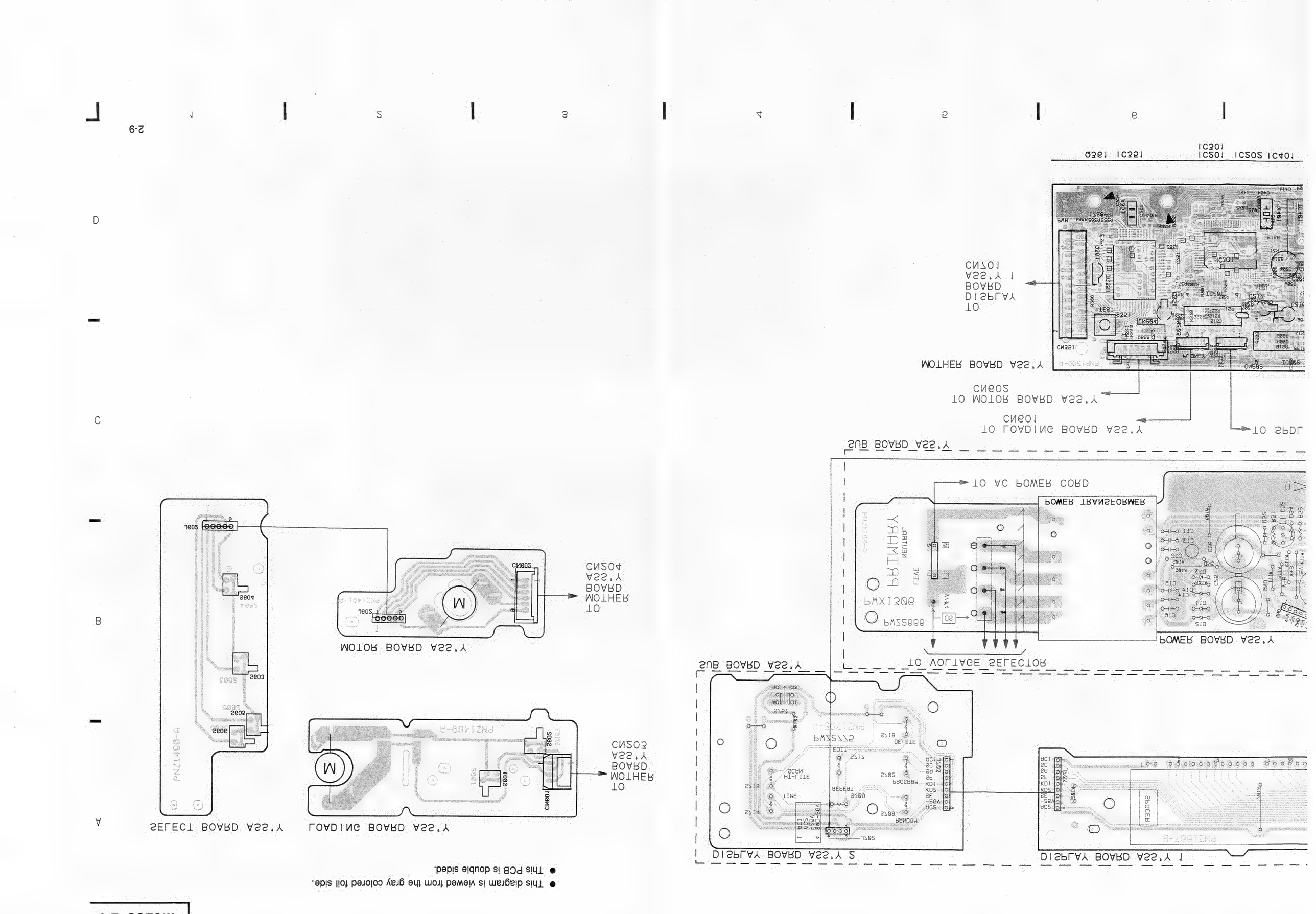
• **How to install the disc table**

1 Use nippers or other tool to cut the three sections marked Ⓐ and the three sections marked Ⓑ in figure. Then remove the spacer.

2 While supporting the spindle motor shaft with the stopper, put spacer on top of yoke M, and stick the disc table on top (takes about 9kg pressure). Detach the spacer.

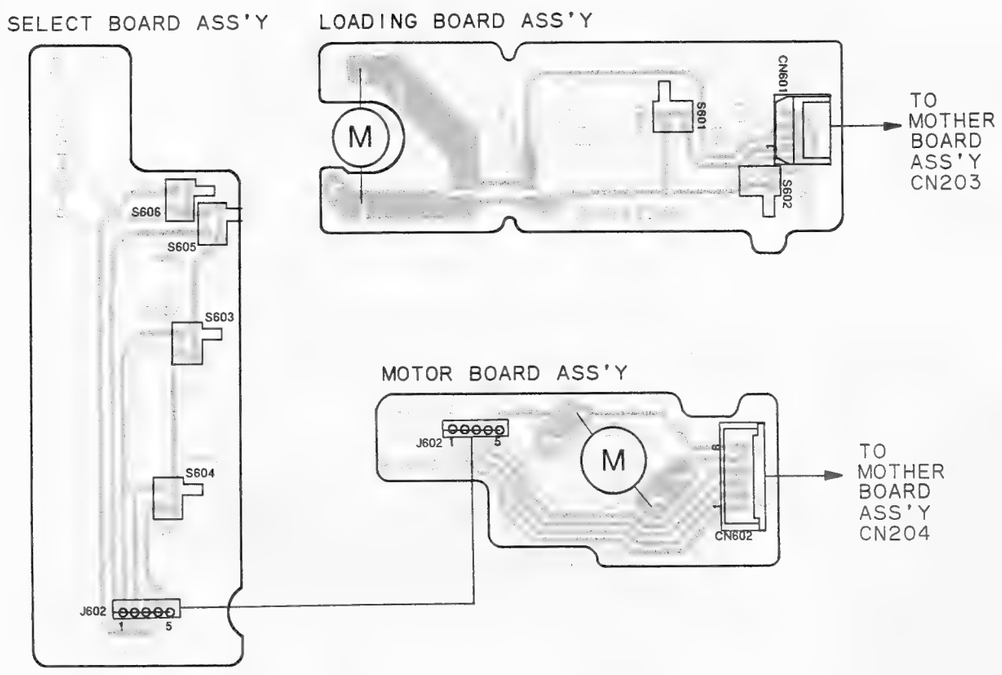
2.3 PCB CONNECTION DIAGRAM

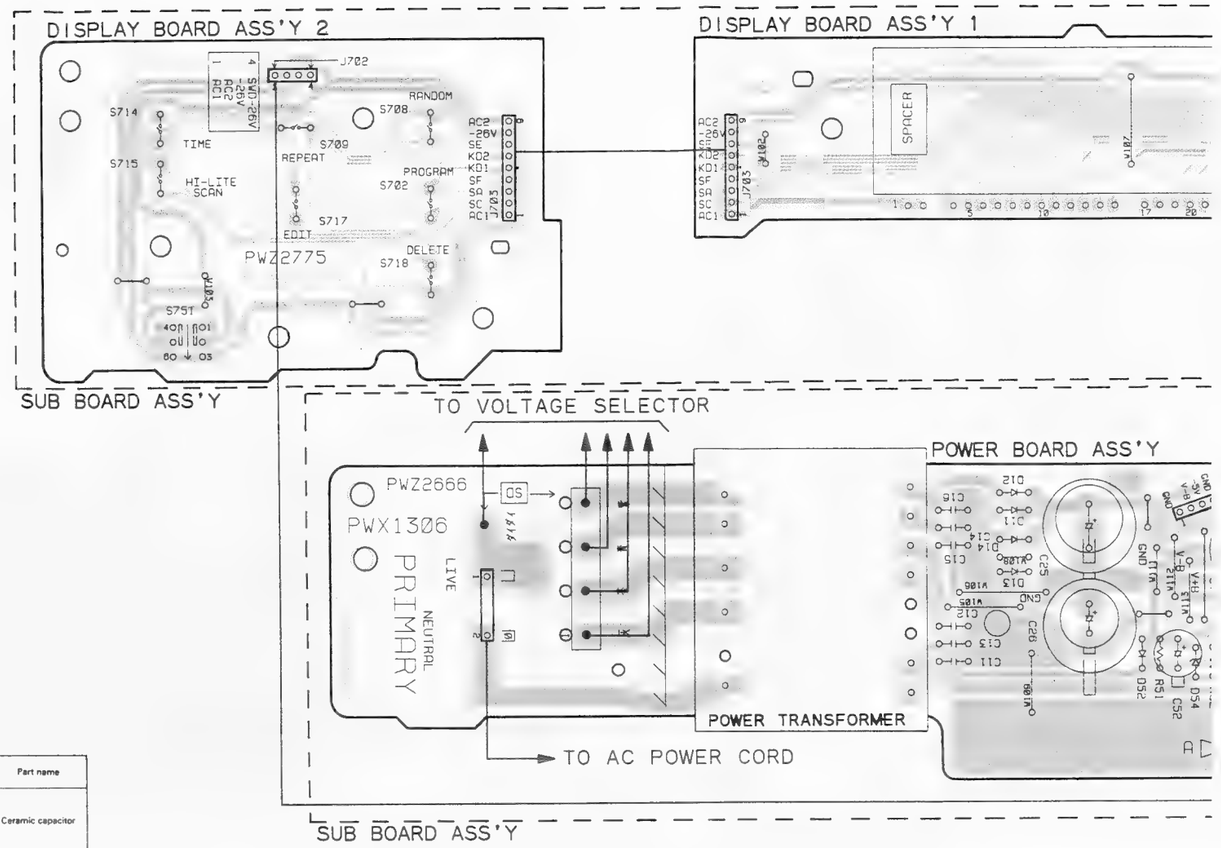




- This diagram is viewed from the gray colored foil side.
- This PCB is double sided.

- This diagram is viewed from the pink colored foil side.
- This PCB is double sided.





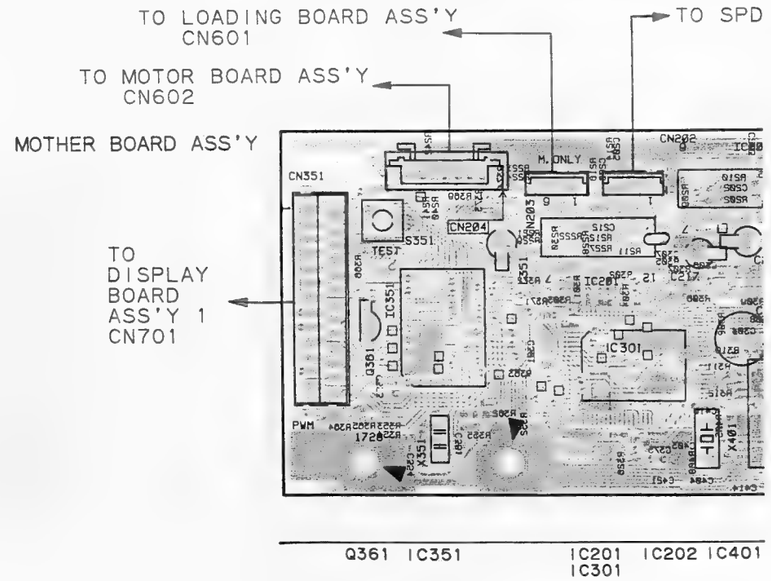
NOTE FOR PCB DIAGRAMS:

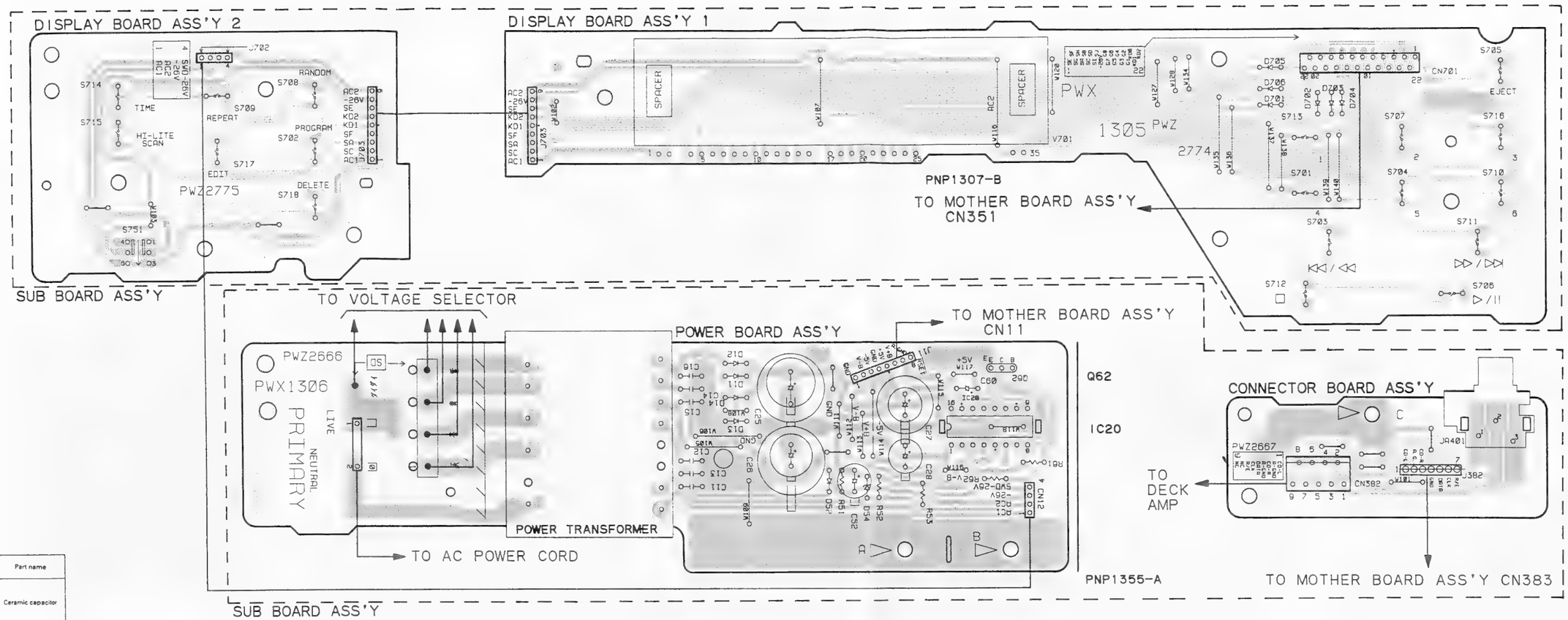
1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
	IN OUT	3- terminal regulator

P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode			Styrol capacitor
					Electrolytic capacitor (Non polarized)
					Electrolytic capacitor (Noiseless)
		Zenner diode			Electrolytic capacitor (Polarized)
					Electrolytic capacitor (Polarized)
		LED			Power capacitor
		Varactor			Semi-fixed resistor
		Tact switch			Resistor array
					Resistor
		Inductor			
		Coil			Resonator
		Transformer			Thermistor
		Filter			

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

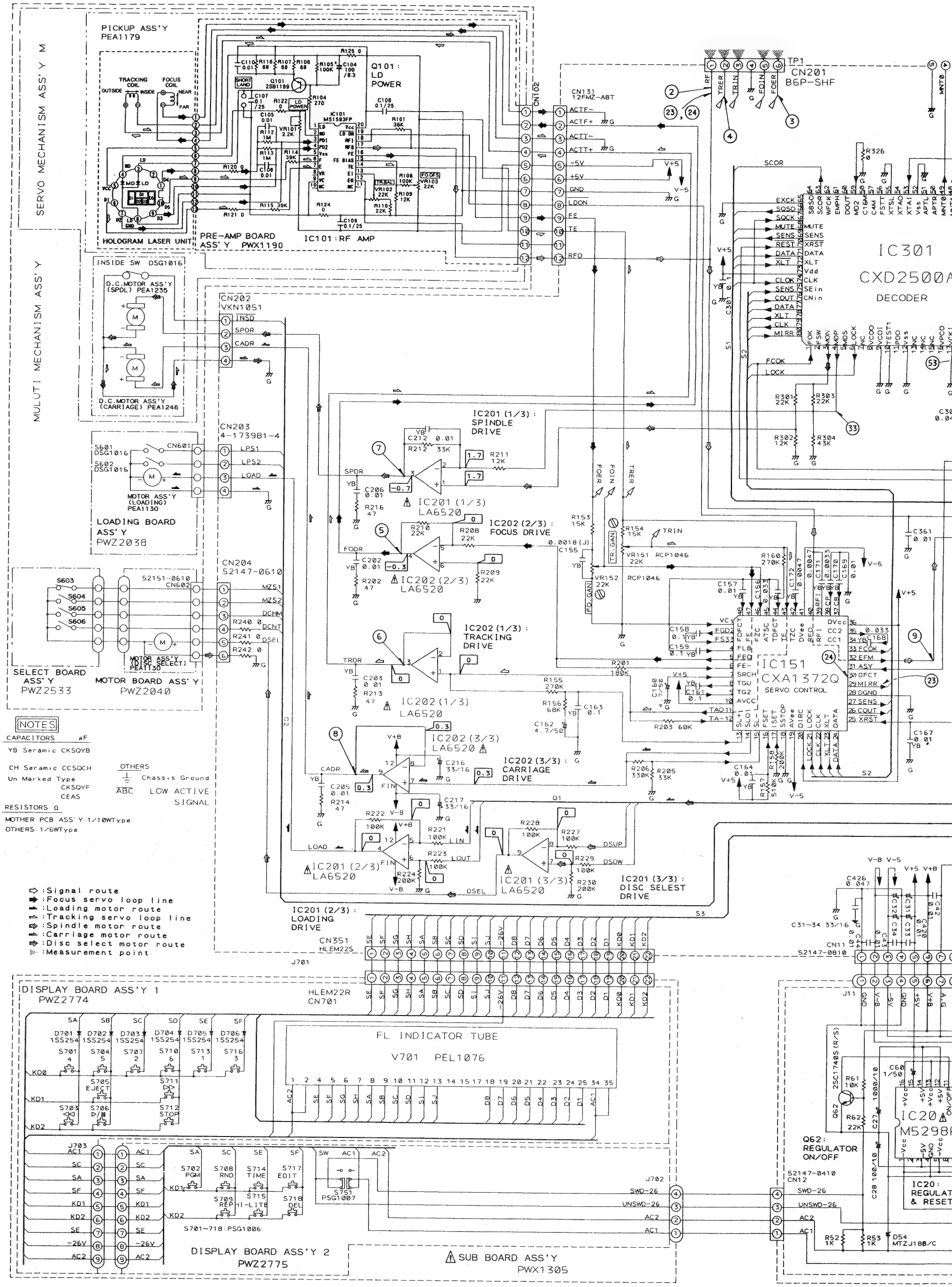


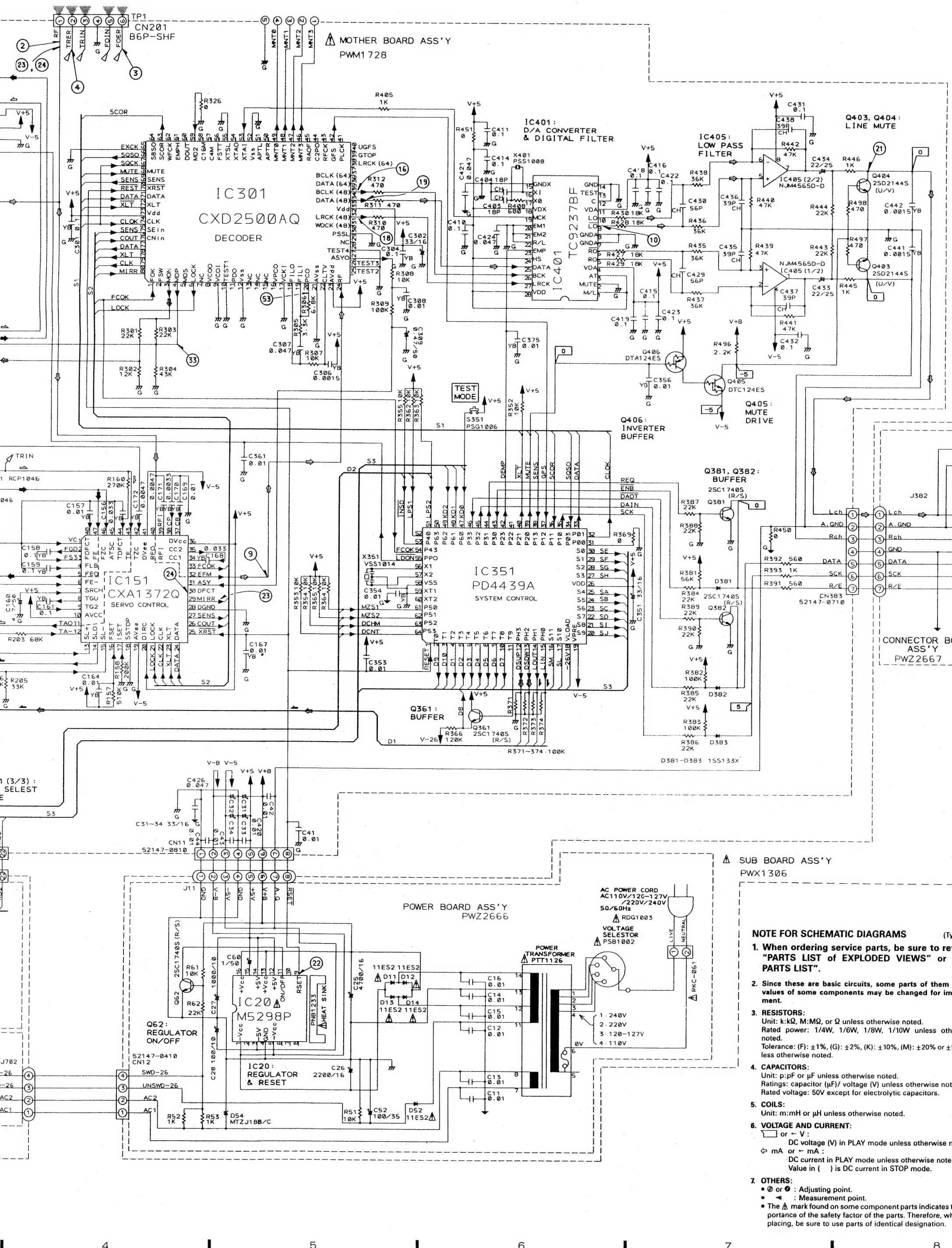


orresponding part symbol	Part name
	Ceramic capacitor
	Mylar capacitor
	Styrol capacitor
	Electrolytic capacitor (Non polarized)
	Electrolytic capacitor (Noiseless)
	Electrolytic capacitor (Polarized)
	Electrolytic capacitor (Polarized)
	Power capacitor
	Semi-fixed resistor
	Resistor array
	Resistor
	Resonator
	Thermistor

corresponding wiring symbols listed in the

2.4 SCHEMATIC DIAGRAM

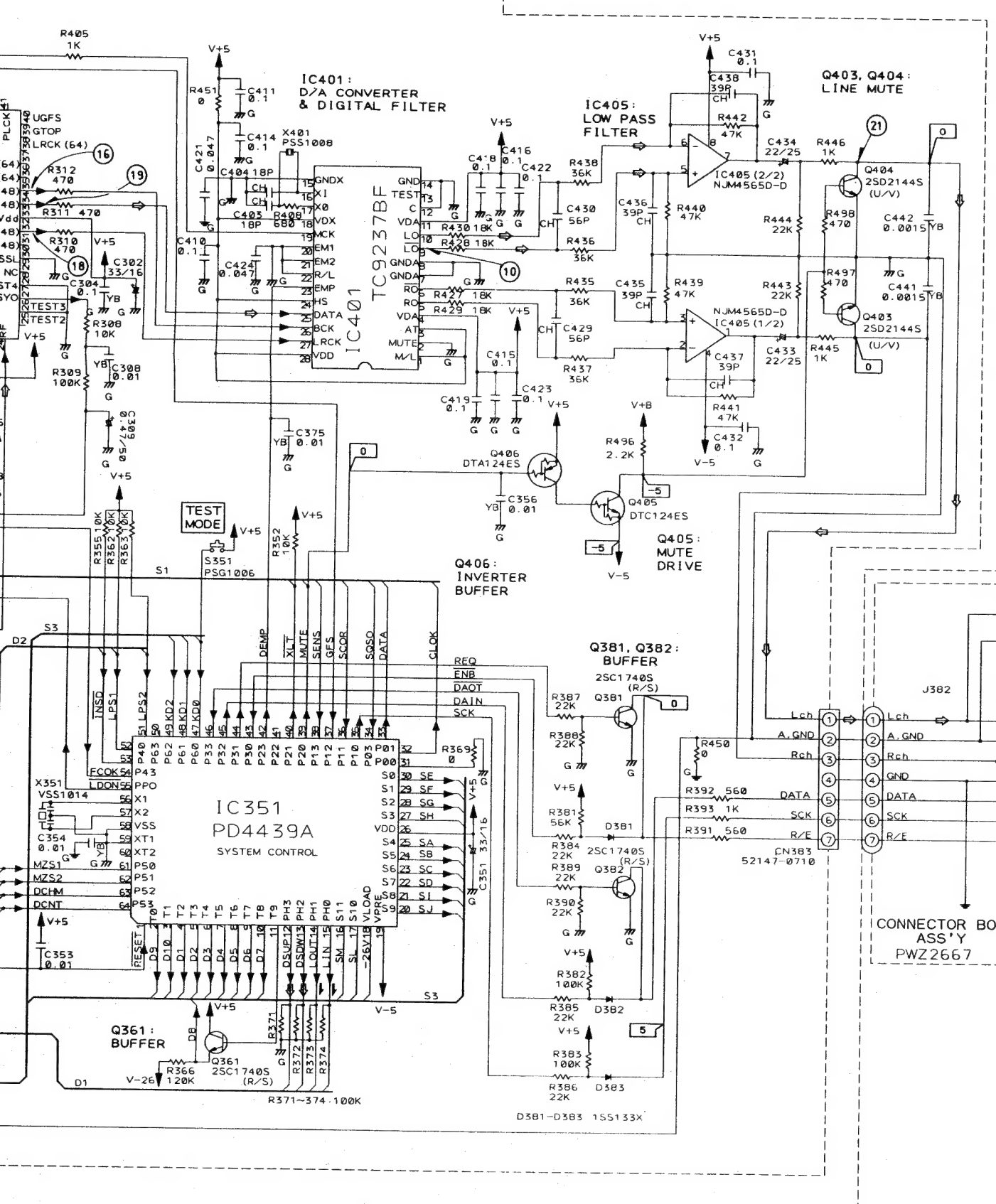




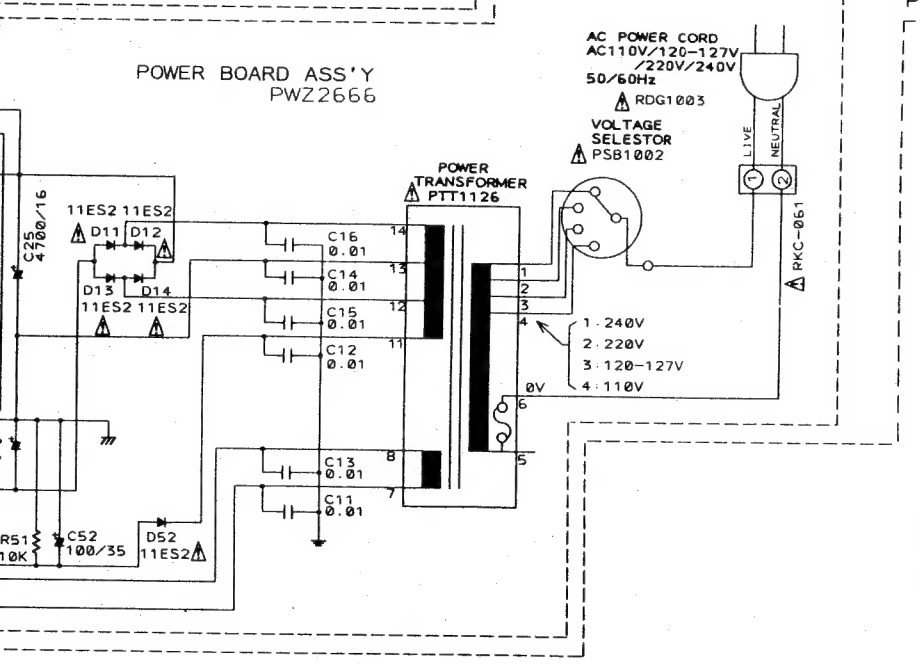
NOTE FOR SCHEMATIC DIAGRAMS (Type 4A)

1. **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**
2. **Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.**
3. **RESISTORS:**
   Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
   Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
   Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
4. **CAPACITORS:**
   Unit: p:pF or μF unless otherwise noted.
   Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.
   Rated voltage: 50V except for electrolytic capacitors.
5. **COILS:**
   Unit: m:mH or μH unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
   ▭ or ← V :
   DC voltage (V) in PLAY mode unless otherwise noted.
   ⇦ mA or ← mA :
   DC current in PLAY mode unless otherwise noted.
   Value in ( ) is DC current in STOP mode.
7. **OTHERS:**
   - ⊘ or ⊘ : Adjusting point.
   - ◄ : Measurement point.
   - The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.

MOTHER BOARD ASS'Y
PWM1728



SUB BOARD ASS'Y
PWX1306



IC301
(CXD2500AQ)

Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	5	41	N. C.
2	N. C.	42	5
3	5	43	N. C.
4	2.6	44	N. C.
5	N. C.	45	N. C.
6	5	46	4.4
7	N. C.	47	0
8	N. C.	48	0
9	0	49	0 to 0.3
10	0	50	N. C.
11	N. C.	51	N. C.
12	0	52	0
13	N. C.	53	2.5
14	N. C.	54	N. C.
15	N. C.	55	0
16	N. C.	56	N. C.
17	0	57	N. C.
18	2.4	58	N. C.
19	2.4	59	0
20	2.4	60	N. C.
21	0	61	N. C.
22	3	62	N. C.
23	5	63	0
24	2.5	64	N. C.
25	N. C.	65	0
26	0	66	3.3 to 4.6
27	2.5	67	5
28	0	68	0
29	N. C.	69	2.1 to 3
30	0	70	5
31	N. C.	71	5
32	2.5	72	5
33	5	73	5
34	2.5	74	5
35	2.2	75	5
36	N. C.	76	0
37	N. C.	77	5
38	N. C.	78	5
39	N. C.	79	5
40	N. C.	80	0

IC351
(PD4439A)

Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	5	33	5
2	N. C.	34	4
3	N. C.	35	5
4	-25	36	0
5	-25	37	5
6	-25	38	2.4
7	-25	39	0
8	-25	40	5
9	-25	41	N. C.
10	-25	42	0
11	-25	43	0.5
12	0	44	5
13	0	45	5
14	0	46	0
15	0	47	0
16	N. C.	48	0
17	N. C.	49	0
18	-28	50	N. C.
19	-5	51	0
20	-7.8	52	0
21	-16.3	53	5
22	-11 to -14	54	5
23	-9 to -12	55	0
24	-6 to -9	56	2.4
25	-11 to -15	57	2.4
26	5	58	0
27	-18.7	59	0
28	-18.7	60	N. C.
29	-15 to -18	61	0
30	-9 to -11	62	0
31	0	63	5
32	5	64	0

IC151
(CXA1372Q)

Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	0	25	5
2	0	26	0
3	0	27	5
4	0	28	0
5	0.3	29	0
6	0	30	N. C.
7	0.3	31	2.5
8	0	32	2.5
9	0	33	5
10	5	34	-1.7
11	0	35	-1.9
12	0	36	5
13	0	37	0.9
14	0.2 to 0.8	38	1.9
15	0	39	0
16	-4	40	0.9
17	1.2	41	-5
18	0	42	0
19	-5	43	0
20	5	44	0
21	5	45	0
22	5	46	0
23	5	47	0
24	5	48	0

IC401
(TC9237BF)

Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	5	15	0
2	0	16	2.4
3	5	17	2.7
4	5	18	5
5	2.7	19	2.6
6	2.4	20	0
7	0	21	0
8	0	22	0
9	2.4	23	0
10	2.8	24	5
11	5	25	2.5
12	0	26	2.4
13	N. C.	27	2.5
14	0	28	5

IC20
(M5298P)

Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	-10	9	5
2	N. C.	10	N. C.
3	-5	11	0.6
4	0	12	5
5	-10	13	9.3
6	-8.3	14	5
7	N. C.	15	1.2
8	N. C.	16	9.3

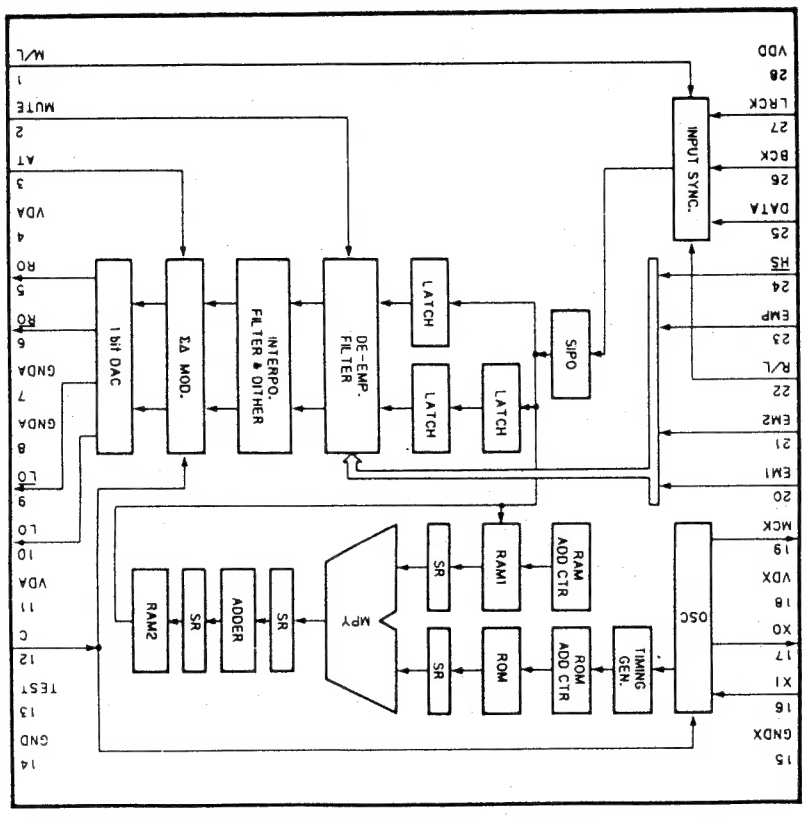
NOTE FOR SCHEMATIC DIAGRAMS (Type 4A)

1. **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**
2. **Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.**
3. **RESISTORS:**
   Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
   Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
   Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
4. **CAPACITORS:**
   Unit: p:pF or μF unless otherwise noted.
   Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.
   Rated voltage: 50V except for electrolytic capacitors.
5. **COILS:**
   Unit: m:mH or μH unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
   ▭ or ← V :
   DC voltage (V) in PLAY mode unless otherwise noted.
   ⇦ mA or ← mA :
   DC current in PLAY mode unless otherwise noted.
   Value in ( ) is DC current in STOP mode.
7. **OTHERS:**
   • ⊘ or ❷ : Adjusting point.
   • ◄ : Measurement point.
   • The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
8. **SCH—□ ON THE SCHEMATIC DIAGRAM:**
   • SCH—□ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)
9. **SWITCHES** (Underline indicates switch position):

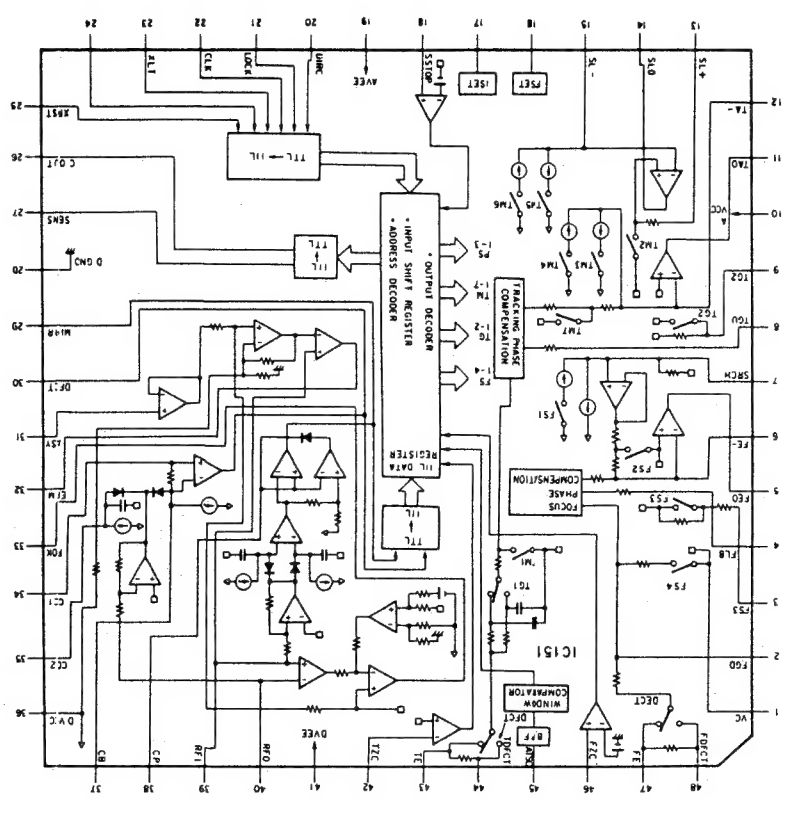
MOTHER BOARD ASSY
S351 : TEST MODE

DISPLAY BOARD ASSY1
S701 : 4
S703 : ⏮ · ⏪
S704 : 5
S705 : ⏏
S706 : ▶/⏸
S707 : 2
S710 : 6
S711 : ⏩ · ⏭
S712 : ■
S713 : 1
S716 : 3

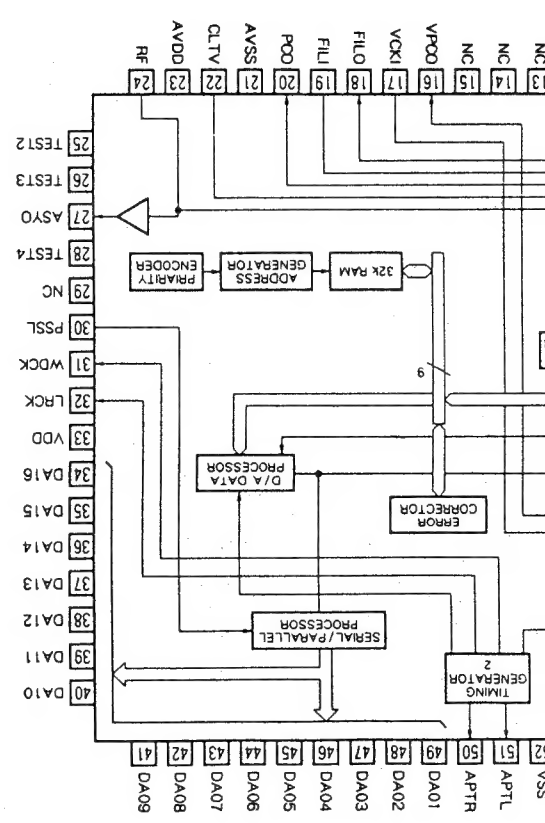
DISPLAY BOARD ASSY2
S702 : PROGRAM
S708 : RANDOM
S709 : REPEAT
S714 : TIME
S715 : HI-LITE SCAN
S717 : EDIT
S718 : DELETE
S751 : STANDBY/ON



IC401: TC9237BF



IC151: CXA1372Q



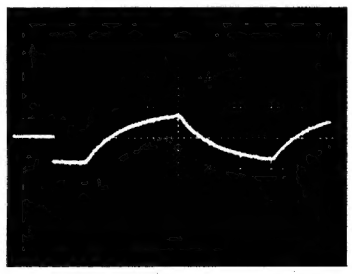
● WAVEFORMS

Note: The encircled numbers denote measuring points in the schematic diagram.

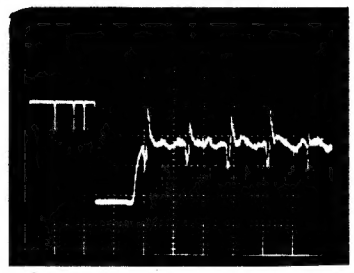
*1 50T-JUMP: After switching to the pause mode, press the manual search key.
*2 FOCUS-IN: Press the key without loading a disc.

② TP1-Pin 1: PLAY MODE
(RF)
500mV/div 500 nsec/div

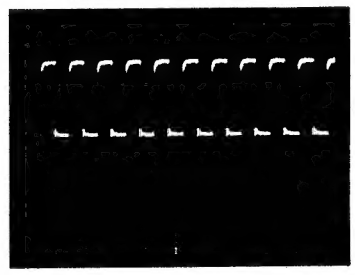
⑤ IC202-Pin 4 : FOCUS-IN (*2) MODE
(FODR)
1V/div 200msec/div



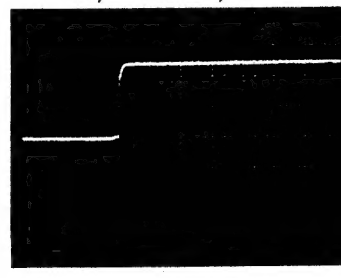
⑦ IC201-Pin 3 : TRACK SEARCH MODE
(SPDR)
2V/div 50msec/div



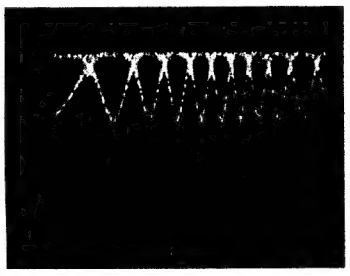
⑯ IC301-Pin 35: PLAY MODE (1kHz)
(BCLK)
2V/div 500nsec/div



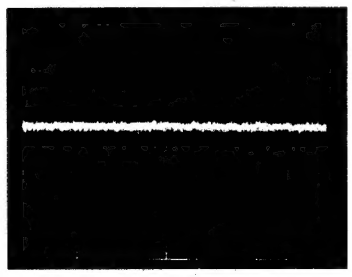
㉒ IC20-Pin 9: POWER SWITC
(R SET)
2 V/div 100 msec/div



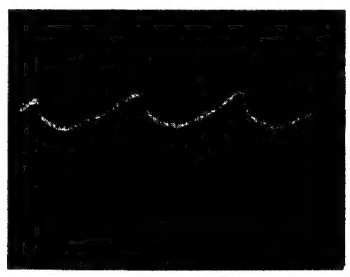
② TP1-Pin 1: TRACK SEARCH MODE
(RF)
500mV/div 200μsec/div



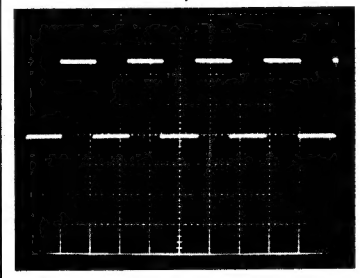
⑤ IC202-Pin 4 : PLAY MODE
(FODR)
1V/div 1msec/div



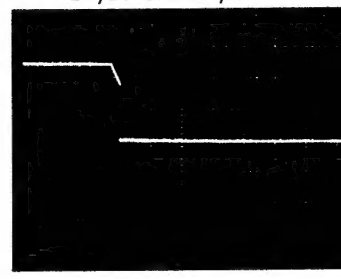
⑧ IC202-Pin 9 : PLAY MODE
(CADR)
200mV/div 2sec/div



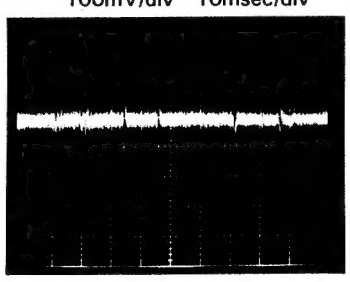
⑱ IC301-Pin 32: PLAY MODE (1kHz)
(LRCK)
2V/div 10μsec/div



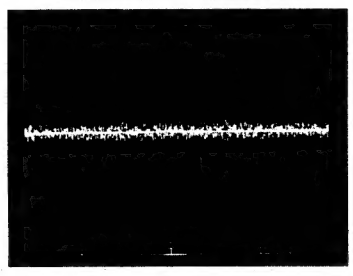
㉒ IC20-Pin 9: POWER SWITC
(R SET)
2 V/div 100 msec/div



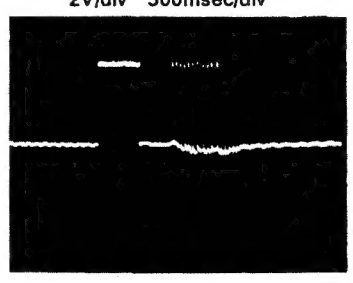
③ TP1-Pin 6: PLAY MODE
(FOER)
100mV/div 10msec/div



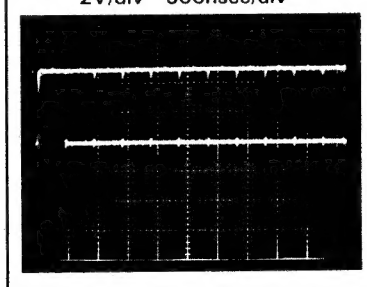
⑥ IC202-Pin 3 : PLAY MODE
(TRDR)
500mV/div 1msec/div



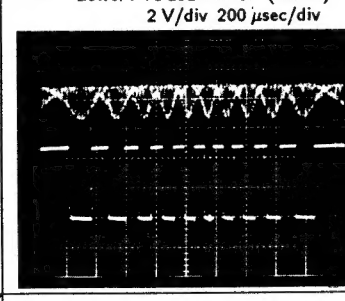
⑧ IC202-Pin 9 : TRACK SEARCH MODE
(CADR)
2V/div 500msec/div



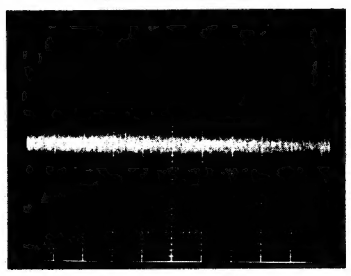
⑲ IC301-Pin 34: PLAY MODE (1kHz)
(DATA)
2V/div 500nsec/div



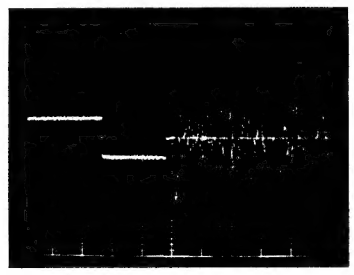
㉓ : TRACK SEARC
Upper : TP 1-Pin 1 (RF) 1 V/di
Lower : IC 151-Pin 29 (MIRR)
2 V/div 200 μsec/div



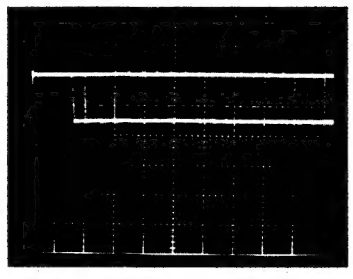
④ TP1-Pin 2: PLAY MODE
(TRER)
1V/div 10msec/div



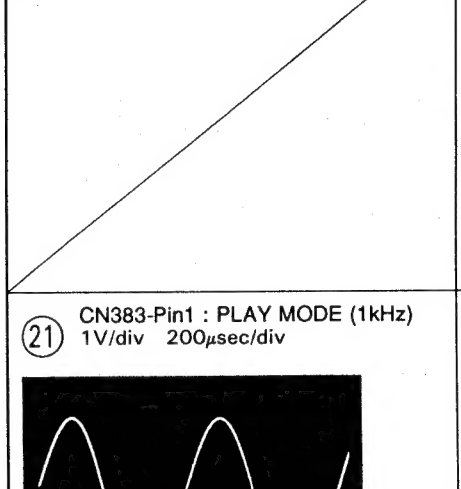
⑥ IC202-Pin 3 : 50T-JUMP (*1) MODE
(TRDR)
500mV/div 1msec/div



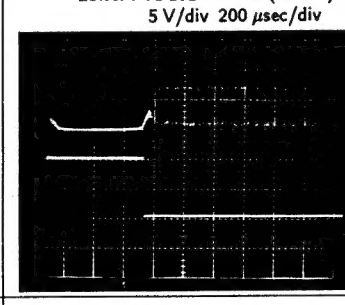
⑨ IC151-Pin 32 : PLAY MODE
(EFM)
2V/div 500nsec/div



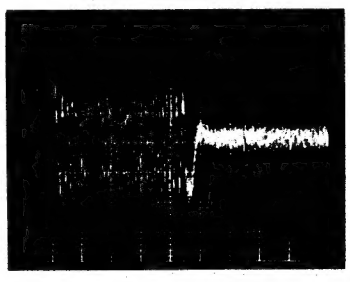
⑳



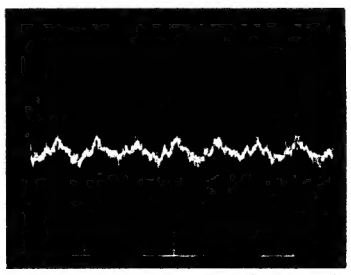
㉔ : PLAY MODE
Upper : TP 1-Pin 1 (RF) 1 V/di
Lower : IC 151-Pin 30 (DFCT)
5 V/div 200 μsec/div



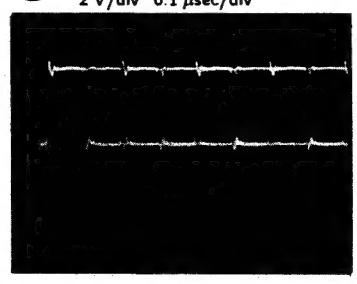
④ TP1-Pin 2: 50T-JUMP (*1) MODE
(TRER)
1V/div 1msec/div



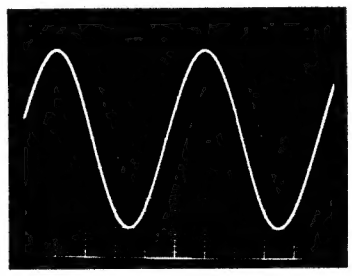
⑦ IC201-Pin 3 : PLAY MODE
(SPDR)
1V/div 50msec/div



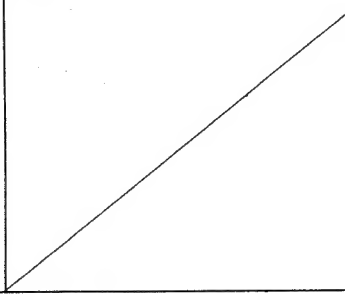
⑩ IC401 - Pin 9:PLAY MODE
(Lo)(D/A DATA OUT)
2 V/div 0.1 μsec/div



㉑ CN383-Pin1 : PLAY MODE (1kHz)
1V/div 200μsec/div

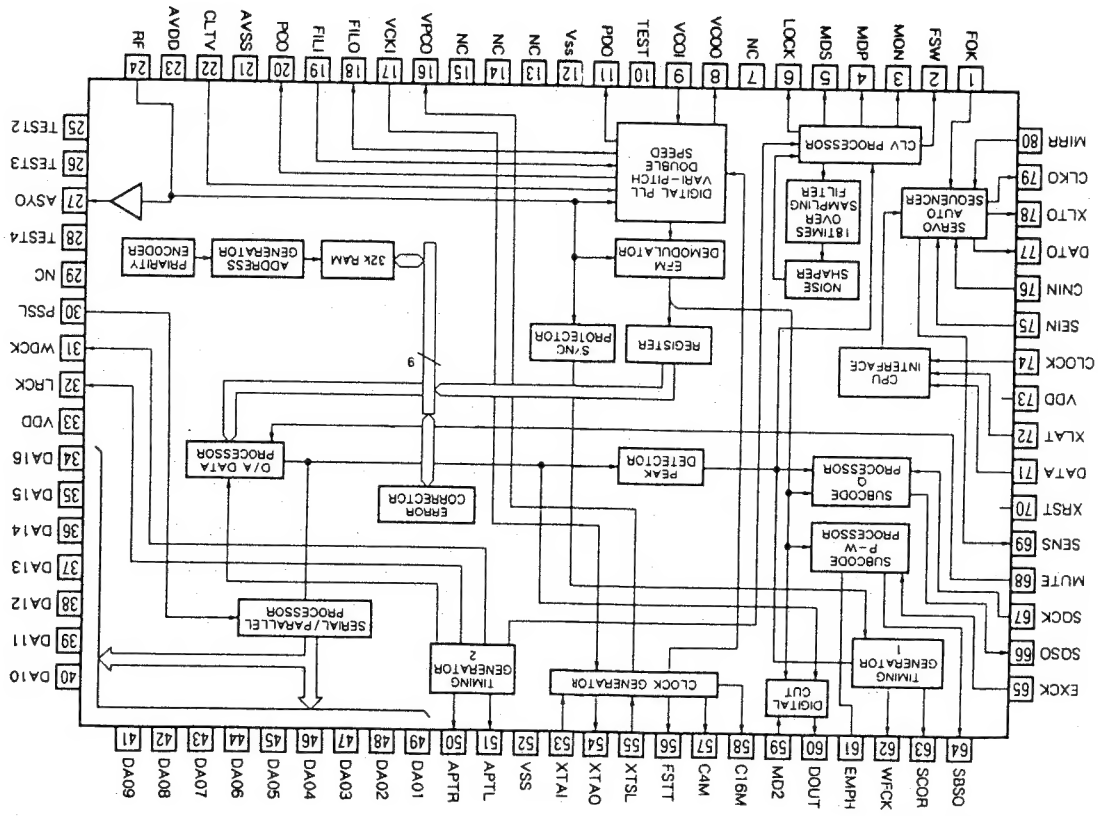


㉕

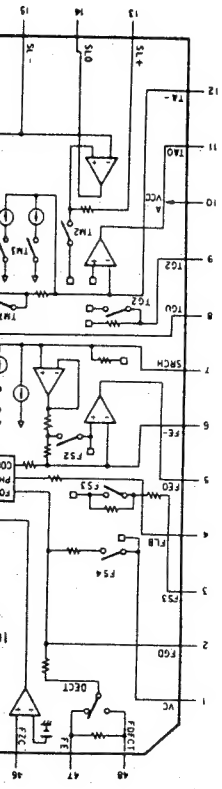


● IC BLOCK DIAGRAMS

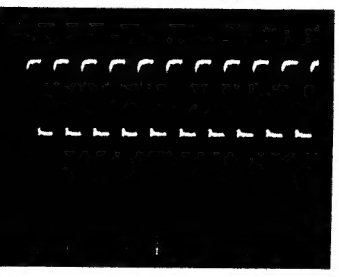
IC301: CXD2500AQ



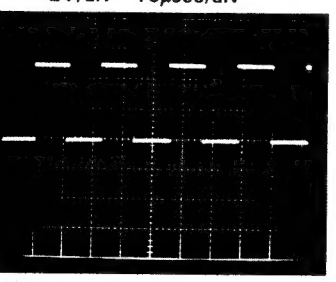
IC151: CXA1372



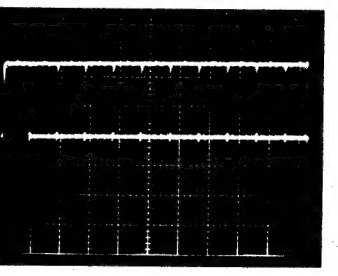
(16) IC301-Pin 35: PLAY MODE (1kHz) (BCLK)
2V/div 500nsec/div



(18) IC301-Pin 32: PLAY MODE (1kHz) (LRCK)
2V/div 10μsec/div

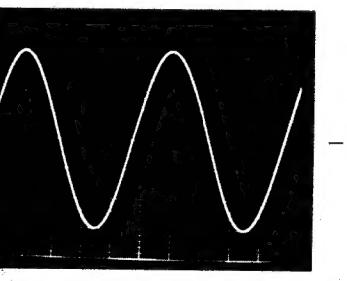


(19) IC301-Pin 34: PLAY MODE (1kHz) (DATA)
2V/div 500nsec/div



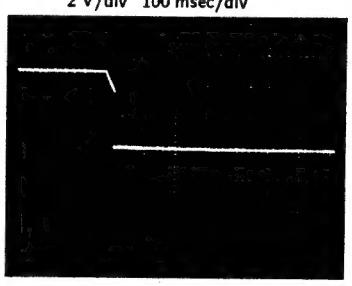
(20)

(21) CN383-Pin1 : PLAY MODE (1kHz)
1V/div 200μsec/div

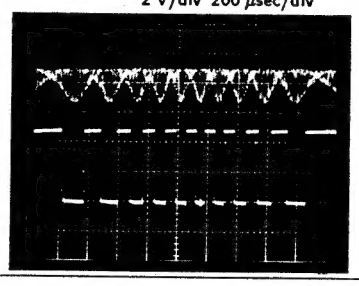


(22) IC20-Pin 9: POWER SWITCH-ON (R SET)
2 V/div 100 msec/div

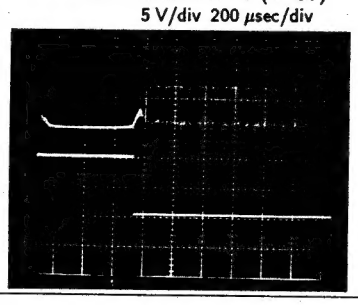
(22) IC20-Pin 9: POWER SWITCH-OFF (R SET)
2 V/div 100 msec/div



(23) : TRACK SEARCH MODE
Upper : TP 1-Pin 1 (RF) 1 V/div
Lower : IC 151-Pin 29 (MIRR)
2 V/div 200 μsec/div



(24) : PLAY MODE
Upper : TP 1-Pin 1 (RF) 1 V/div
Lower : IC 151-Pin 30 (DFCT)
5 V/div 200 μsec/div



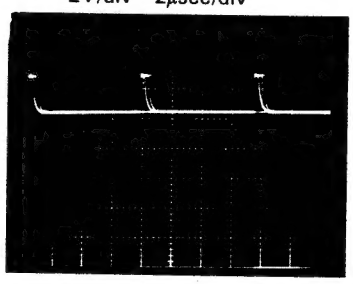
(25)

(26)

(27)

(28)

(33) IC301-Pin 4: PLAY MODE (MDP)
2V/div 2μsec/div



(53) IC301-Pin 20: PLAY MODE (PCO)
2V/div 10μsec/div